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Volume 49
Number 1

BULLETIN OF THE HISTORY OF MEDICINE

ORGAN OF
THE AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

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Founded by HENRY E. SIGERIST

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Contributors of articles will receive 25 reprints without covers free of cost. An order form for additional reprints, giving the cost, is sent with the galley proof.

The Bulletin is published quarterly. One volume of at least 500 pages is published during the year. Yearly subscription rates are $15.00 for individuals, $20.00 for institutions. Foreign subscribers add $1.50 for postage. Current single issues are $5.00 each. New subscriptions are entered to begin with the first issue of the current volume and should be sent to The Johns Hopkins University Press, Baltimore, Md. 21218. Claims for replacement of missing numbers must be received within 3 months (6 months in the case of foreign subscribers) following publication of the number.

Members of the American Association for the History of Medicine receive the Bulletin on payment of $18.00 annual dues, of which $12.00 is for a year's subscription. Changes in address of members and application for membership should be sent to the Secretary-Treasurer, Dr. Genevieve Miller, 11,000 Euclid Ave., Cleveland, Ohio 44106 and *not* to the Johns Hopkins University Press.

THE JOHNS HOPKINS UNIVERSITY PRESS
BALTIMORE, MARYLAND 21218 U S A

PUBLISHED QUARTERLY
Spring, Summer, Fall, Winter
Made in United States of America

Second-class postage paid at Baltimore, Maryland and at additional mailing offices

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P25964
Cu6-H02963-3 — P25964

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VOLUME 49

BALTIMORE
THE JOHNS HOPKINS UNIVERSITY PRESS
1975

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VOLUME 49 SPRING NUMBER 1

THE MIGRAINE TRADITION

FRANCIS SCHILLER

Patients who have, or think they have, migraine, usually feel this is somehow superior to any other kind of headache. Evidently the world of suffering is strung out along a scale of social acceptability ranging from afflictions that confer status to some that are rather unmentionable in polite society. Given this distinction, an author on migraine had better state at once that he is not a *migraineux*. He is therefore an outsider to the galaxy of connoisseurs — there are eminent astronomers among them — who have made fundamental contributions to the subject, writing about their own case inclusively, on occasion exclusively. This is so characteristic that the question has been asked — not without a touch of malice — by Lasègue in his review[1] of Liveing's contemporary classic on the megrim,[2] whether nonsufferers (such as both of them were) should ever claim a real understanding of the condition. Migraine does hardly maim or kill, hence outsiders are tempted to speak of it lightly. Some patients, too, are stoics. Louis' XIV pious last mistress, for instance, Mme de Maintenon, reassured a solicitous friend that "migraine does not warrant the alarm which you feel; it is the only tribute to nature that my temperament has to pay."[3] Still, that "tribute" often turns out to be a suffering of the damned, one that seems unjustly inflicted on the most virtuous, meritorious of men and especially women.

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[1] Charles Lasègue, "De la migraine," [review], *Arch gén. de méd* , 1873, 22: 580-597

[2] Edward Liveing, *On Megrim, Sick-Headache and Some Allied Disorders, a Contribution to the Pathology of Nerve-Storms* (London. Churchill, 1873). A measure of its popularity, megrim, according to *A New English Dictionary on Historical Principles* (Oxford. Clarendon Press, 1908), vol. 6, pt 1, p 310, has been spelled in 33 different ways (only *g*, *r*, and the initial *m* remain constant). "A fervent mygreyn was in the right side of hurre hedde," c 1420, heads the list. All, including the eventual migraine (1770), are no doubt of French origin.

The condition is so common with the élite that at the Royal Society of Medicine in London, Section of Ophthalmology, March 28, 1919, only one of the eight discussants had not himself experienced its symptoms. The famous neurologist Gordon Holmes, of the remaining seven, criticized the principal speaker, a Mr. Fisher, for putting forth a theory (allegedly his own) about swelling of the pituitary. (Endocrinology was just coming into vogue.) But surely, Holmes argued, pressure by that gland on the optic tract, as the ophthalmic surgeon had suggested, was an unlikely mechanism. Have pituitary tumors ever been known to produce paroxysms, visual or neuralgic?[4]

Indeed humoral (or endocrine) aspects of migraine (not to speak of mechanical ones) have for at least 200 years remained somewhat outside the mainstream of this debate, in favor of a neurogenic and a vascular theory.[5] If today the latter is thought to have originated in the 1930s and 1940s with Harold Wolff,[6] the belief is due to the tendency memories have to be short. Notoriously, the past is apt to get telescoped. Patients for example tend to underestimate the duration of their complaints; in the case of migraine some even have to be reminded that they suffered from it in childhood.

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[3] Emile Littré, *Dictionnaire de la langue française* (1866-1877) (Paris: Gallimard/Hachette, 1964), vol. 5, pp. 235-236. Littré derives *migraine* via the Spanish *migraña* and the Italian *emigrania* and *magrana* from Galen's *hemicrania*, the sickness of "half the head." Aretaeus' contemporary *heterocrania* (neither term was necessarily coined by these authors) sensibly emphasizes that the pain may change sides from one attack to the next. Galen's greater authority, and possibly euphony, prevailed. There is lasting validity in Aretaeus' tripartite classification of headache into *heterocrania* for migraine, *cephalea* for all headaches with an underlying structural cause (including infectious disease) and *cephalalgia* for the rest — our "muscle tension headaches." Aretaeus, *The Extant Works*, tr F Adams (London: Sydeham Society, 1856), "On the causes of chronic diseases," p. 294.

[4] Herbert Fisher, "Migraine. With subsequent discussion," *Proc. Roy Soc Med., Sec. Ophthalm.*, 1919, *12* (3) 49-55 The idea of a swollen, hyperemic pituitary gland causing migraine went back to Deyl, who gave this "explication anatomique" at the XIII International Congress of Medicine in Paris in 1900 (Sect. de Neurol. p. 571) and to Václav Plavec (Prague), "Beitrag zur Erklarung der ophthalmoplegischen Migräne," *Dtsche Zschr. f. Nervenhk* , 1907, *32*: 183-231. Not only the ophthalmoplegic but all forms of migraine are caused by pituitary swelling, which is vasomotor in origin and triggered, in turn, by some auto-intoxication, Plavec thought. (Autointoxication once played the role of today's auto-immunity.) These opinions are favorably reviewed in Edward Flatau, *Die Migrane* (Berlin: Springer, 1912), pp. 177-180, then the standard 253-page monograph by this renowned Polish neurologist and sufferer from migraine. Flatau accepted with the current "vasomotor innervation of the cerebral circulation" the "cortical phenomena of migraine" and, in addition, Quincke's idea of an "angioneurotic hydrocephalus." (Heinrich Irenaeus Quincke was of course the originator of the spinal tap [1891] as well as of angioneurotic edema [1882].) Concluding. Flatau denied migraine the status of an autonomous clinical or pathological entity; he spoke of a "syndrome reflecting an innate disposition for morbid *neuro-metabolic* processes, a congenital neurotoxic diathesis, the most important role being played by the endocrine glands," multifocal, associated with increased cerebrospinal fluid pressure, and with "variable morbid processes elsewhere in the body."

[5] The most easily available history is Henry Alsop Riley, "Migraine," *Bull. Neurol. Inst. New York* , 1932, *2*: 429-544 The secondary sources used by Riley and other writers are Liveing (note 2 above), and a librarian, Louis Thomas, *La migraine* (Paris. Delahaye & Lecrosnier, 1887).

The controversy between a vascular and a neurogenic etiology has been carried along with the flow of many generations and has filled the gap between them. While the passage of time modifies the details, the basic outline of the debate remains recognizable. (Generally speaking, to regard evolution as the only active force in shaping scientific concepts unduly narrows down the analysis. Is the clash of ideas only a confrontation between old and young, past and present, is the psyche of Oedipus more complex-ridden than Cain's, patricide more common or typical than fratricide? Historiography clearly reflects a persistence of trends and conflicts, their "being" as well as their "becoming." The migraine debate, incidentally, has unlike others never been unbecoming—as befits the genteel character of the subject.) For two hundred years we can match suitable contemporaries arguing about neurogenic versus vascular factors in the causation of migraine.

Now in migraine there is pain on one hand, all manner of weird or defective sensations on the other. (This dual aspect of each "classical" attack also symbolized, as it were, the dual historical aspect mentioned, for the symptoms of migraine may be coexistent as well as consecutive, just as the rival theories about them are.) When we speak of "classical" migraine we refer to the visual prelude (or accompaniment) that has always lent fascination, color, and status to this peculiar headache. In the 5th century A.D., Caelius Aurelianus, the translator of Soranus (2nd century A.D.), described "the sudden fogging of vision (*nebula*), the lines (*tractus*) resembling the veins of marble called sparks (*marmarygae*) by the Greeks."[7] But heavy stress was laid on this uncanny phenomenon only in the 19th century when migrainous men were bent on unravelling the mysteries of light, to establish the laws of optics and perception. This is why we find astronomers and physicists contributing their self-observations, men trained and eager to leave no detail unreported that might have some bearing on their field of study. These students — these patients — found their way into the medical literature, together with the physiologists and the clinicians.

The history of hemianopic scotoma is an exercise in name dropping that begins with Wollaston. Although a qualified physician, William Hyde Wollaston retired from practice at the age of 34 in order to devote himself entirely to physics and chemistry: he was too sensitive to endure that "mental flagellation called anxiety" for his patients. At one time a vice president of the Royal Society, Wollaston had among other things discovered the dark streaks that cross the solar spectrum (1802), the elements palladium and rhodium (1803 and 1804); he had invented the camera lucida (1807). He also found urates in gouty joints (1797) and cystine, as well as phosphate and magnesium stones, in the urine (1810).[8] In 1824 he thought it worth while to report his two single attacks of hemianopic scotoma (as we say today). They were unattended by pain and had occurred, respectively, 15 months and 20 years earlier. His reason for publishing was that "in reflecting upon this subject, a certain arrangement of the optic nerves has suggested itself to me . . . ." The arrangement he had in mind was of course the "semi-decussation" of the optic fibers in the chiasm — the one we still teach today.[9]

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[6] Harold G. Wolff, *Migraine and other headpain* (New York. Oxford University Press, 1948), 2nd ed 1963

[7] *Caelius Aurelianus, On Chronic Diseases*, ed and transl. I E. Drabkin (Chicago. University Press, 1950), p 473 (my translation).

A contemporary of Wollaston, also F.R.S. and troubled by migrainous scotomata, was Caleb Hillier Parry, the renowned practitioner of Bath. Dr. Parry described exophthalmic goiter before Basedow and Graves, and he interpreted angina in 1799 as a cardiovascular phenomenon long before this was firmly established. When he was 61 he suffered a stroke affecting his speech and right side; but it left him able to read, write, and even dictate his reminiscences.[10] Several years before his stroke this compulsive note-taker wrote down how he had been exposing himself to "fatigue and fasting for 8 to 10 hours . . . and now, September 26, 1808," was suffering "diarrhea succeeding great pain in the bowels." This was followed by a "sudden failure of sight . . . When I looked at any particular object, something brown, and more or less opake [sic], was interposed between my eyes and it. . . . Much more rarely the cloud was on one side . . . the upper edge bounded by an edging of light of zig-zag shape, and corruscating at nearly right angles to its length." This he marvelled was the case "equally whether I looked at an object with one or both eyes open." It was all over after 20 to 30 minutes, the "corruscation" outlasting the "cloud" and there was "never headache . . . but . . . eructation."[11]

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[8] *The Dictionary of National Biography* (London: Oxford University Press, 1959-1960), vol. 21, pp 782-788

[9] William Hyde Wollaston, "On semi-decussation of the optic nerves," *Philos. Trans.*, 1824, *114*: 222-231. In Wollaston's day, either the Galenic idea of an ipsilateral arrangement, or the total crossing suggested by Morgagni (1719) and by Vater and Heinicke (1723) still were prevalent despite the illustrious forerunnership of Newton who had postulated "partial decussation" in his *Opticks* (1704); also of John Taylor, the "ophthalmological knight-errant" who had correctly depicted the two superimposed divergent Y's that form the X of the chiasm (1727); there was even, we are told, a correct 11th-century Arabic version by Ibn al-Haitham (Alhazen) Had Wollaston no inkling of any of them? He does not say. He may well have been unaware of Burdach whose correct view was recent (1822). S. Polyak, *The vertebrate visual system* (Chicago: University Press, 1957), pp. 107, 109, 111, 113-116, 156, 158 (an admirable work), quotes "especially" Wollaston in this context, his "lucid description and interpretation" and "his clearly formulated hypothesis " One may wonder whether Wollaston is a good example of migrainous scotoma· he is thought to have died of a brain tumor, with initial signs of "numbness in the left arm" and an "insensitive [fixed?] left pupil" (note 8 above). But this was in 1828—about 5 and 25 years, respectively, after the hemianopic attacks referred to in his paper of 1824.

[10] Note 8

For the semicircular arrangement of scintillating zig-zag lines Parry did not use the term "fortifications," and Wollaston did not experience them. An obvious 18th and 19th-century preoccupation, this image seems to have first occurred to Fothergill in his account (1778) of the "Sick Headach." Fothergill himself, "having had some little experience of the complaint" cursorily noted that objects appear "surrounded with luminous angles like those of fortifications . . . a singular glimmering in the sight."[12]

Wollaston's interpretation of "hemiopsia" was promptly translated into French, and annotated by François Arago, one of the leading physicists of the day, eager to confirm the phenomenon from his own scotomata.[13] There was a lapse of forty years before the English scientific community again concerned itself with the subject. But the person who brought it up was still of Wollaston's and Arago's generation. One might expect that his man who, (in 1816) invented the kaleidoscope, was subject to scintillations but he was only disturbed by hemianopic scotomata. His specialty was to combine mineralogy with optics; together with Arago he laid the basis for our knowledge of polarized light. This was Sir David Brewster, F.R.S., a co-founder of the British Association for the Advancement of Science, one of the most prolific as well as reliable contributors and editors of scientific journals and encyclopedias, a highly literate Scotsman, son-in-law of Macpherson, the famous-infamous faker of the "prehistoric" Ossian ballads.[14] Not before 1865 — he was 84 by then — did Brewster get around to describing his scotomata. He did not think Wollaston's chiasmatic hemidecussation was necessary to explain the "hemiopsy"; he considered it purely retinal in origin. Headache was not a sequel with him either.[15]

Brewster's autobiographical contribution stung a younger, hardly less prominent colleague into action. In the next issue of the *Philosophical Magazine*[16] Sir David was joined by the 64-year-old Sir George Biddell Airy,

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[11] Caleb Hillier Parry, *From the unpublished medical writings* (London: Underwood, 1825), pp. 262, 264, 557-559.

[12] John Fothergill, "Remarks on that complaint commonly known under the name of the sick-headach," (Read Dec. 14, 1778) *Med. Observ. & Inquir.*, 1784, *6*: 103-137.

[13] Note 19 below.

[14] *D N B* (note 8 above), vol. 2, pp. 1207-1211.

[15] David Brewster, "On hemiopsy, or half-vision," *Philos. Mag* , 1865, *29* 503.

[16] George Biddell Airy, "On hemiopsy," *Philos Mag.*, 1865, *30*: 19-21.

Astronomer Royal for 46 of his 91 years. Besides scotomata Sir George suffered from astigmatism which he had analyzed for future generations, and no one, not even Sir David, could have been of a more orderly and perfectionist disposition.[17] G. B. Airy accompanied his letter to the editors with a sketch of his "zigzags nearly resembling those in the ornaments of a Norman arch," plotted in their consecutive positions during the attack. In contrast to Brewster, George Airy "entertained no doubt that the seat of the disease is the brain; that the disease is a species of paralysis; and that the ocular affection is only a secondary symptom." No wonder, for at one time, says Sir George, "while I was conversing with an acquaintance in a railway-carriage I soon became painfully sensible that I had not the usual command of speech, that my memory failed so much that I did not know what I had said or had attempted to say, and that I might be talking incoherently."

What we call aphasic manifestations had been recorded before with migrainous attacks, by Tissot, Parry, Lebert, Abercrombie, and Travers, mostly in their own cases.[18] The hereditary nature of migraine too was well known, but in the case of the Airys heredity can be extended even to the reporting of the condition. In 1870 one of Sir George's sons, Hubert Airy, M.D., through his eminent father, contributed to the Royal Society an extensive review "On a distinct form of transient hemiopsia."[19] Dr. Airy added not only his own case to the previous ones, he also coined the term *teichopsia* (a translation of "seeing fortifications"), accompanied by no less than two plates with a dozen telling illustrations. From Hubert Airy's thoughtful and basic paper we also get the information that Sir Charles Wheatstone, F.R.S., suffered from the zig-zag scotoma and "an effect like the motion of a luminous liquid." "Almost morbidly timid" the *Encyclopedia of National Biography* calls Wheatstone, the man who invented the rheostat (with the "bridge" named after him), the stereoscope and the spectroscope (or variants thereof) — another pioneer in the fields of acoustics, optics, and electricity. Hubert Airy further quotes the reaction to his father's report abroad by a Professor Dufour in Lausanne. Having seen Sir George's description translated in a French publication, Dufour hastened to send an account of his own scotomatous migraine attacks (complete with headache). But most gratifying was Hubert Airy's correspondence on the subject with Sir John Herschel. Sir John occupies the center of three generations in an illustrious family of astronomers and physicists — issued like the Royal family from Hanover — including his aunt Caroline. "Light was my first love," Sir John is fondly quoted, and his fame rests on the cristallographic and optical peculiarities of quartz.

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[17] D N B (n. 8 above), vol. 22, Suppl., pp 22-25.

[18] Liveing (n. 2 above), p. 84

[19] Hubert Airy, "On a distinct form of transient hemiopsia," *Phil. Tr. Roy. Soc.*, 1870, *160*. 247-264

Unlike some of the other corresponding members of the migraine circle, Herschel did not ascribe his attacks to things like "reading for a long time the small print of the Times newspaper," or to "anxiety," or to "overcrowding of business." Not at all, the setting was idyllic and relaxed: "I was sitting one morning very quietly at my breakfast-table, doing nothing and thinking nothing, when I was startled by a singular shadowy appearance at the outside corner of the field of vision of the left eye. . . . A pattern in straight lined angular forms, very much in general aspect like the drawing of a fortification, with salient and re-entering angles, bastions, and ravelins, with some suspicion of faint hues of color between the dark lines." While it advanced on the right he became a little alarmed, he says. But not even a headache followed, as was the case with a lady of his acquaintance, she being the only person Sir John knew who seemed familiar with the condition. Next, a letter Herschel received from Dr. Airy was followed by a slight attack two or three hours later — "it is strange, and I am sure more than a coincidence," he wrote back. After that — Herschel was again writing Airy 18 months later — he was "very frequently visited by the phenomenon," and he went on describing it with loving detail.

It was the brain — in 1870 Dr. Airy did not doubt it — "a temporary affection" of either optic tract, "or its origin in the corresponding optic thalamus" which must be "the actual seat of the visual derangement," the same as in permanent "hemiopsia." (The occipital cortex was to be given as that seat in the 1880s.)[20] Is the mechanism vascular, H. Airy asked, is it "a temporary suspension of function, propagated by contiguity, among the nerve-cells of the visual sensorium (wherever that may be), due to vascular congestion, and relieved by the relief of that congestion?" And since, unlike his father, Sir John, Sir David, and others, Hubert Airy did suffer from headache, does this headache, "following close upon the departure of the morbid vision, tell of the further propagation of the nervous disturbance into parts of the brain where disturbance is ache?" Regarding the "detriment of speech and hearing . . . does this mean extension of the same disturbance still further into the regions of the brain substance appropriate to those functions?" (Broca's and Jackson's pronouncements on these matters were, of course, part of the decade just passed.)[20] Hence, "We can hardly avoid the conviction that [the phenomena are] . . . localized."

Our account so far has been focused on the British and largely extramedical scene. Here, and before the 1870s, optics dominated the interest, while opinions only just began to diverge regarding the physiological mechanism of migraine. Airy, Sr., disagreed with Brewster on the central versus the peripheral origin. In Airy, Jr., we find a synthetic assumption; he linked the old concept of congested blood vessels with the new idea of a cortical disturbance spreading from a still hypothetical visual center to an even more hypothetical center for pain. But for all his circumspection the younger Airy moved in a somewhat narrow national orbit. Perhaps he felt the foreign literature was not directly relevant to his main concern, that of disturbed vision. Although he was himself plagued with head pain he mainly presented that aspect almost as a by-product. But what we now call "common," — as opposed to "classical" or "ophthalmic" — migraine was the concern, the affliction, and hence the spur to a towering figure in contemporary German medicine for presenting his own case and his own seemingly brand new theory.[21] This sufferer from migraine (without scotoma) was Emil Du Bois-Reymond, the recent successor to Johannes Müller in the chair of physiology and Permanent Secretary of the Berlin Academy of Science.

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[20] Note 9 Polyak, pp. 150-153 (on vision), 138-146, 163-179 (on speech), and many others

Typically Du Bois-Reymond, "even though otherwise quite healthy" — as he, aged 41, assured his listeners in 1859 — had suffered from headaches since he was 20. Attacks came at three to four weeks intervals, "usually," he said in conformity with current and ancient belief, "as the result of something harmful such as a long fast, a tiring party, etc. As a rule they are preceded by constipation." Summers were better than winters, "on hiking trips they stop completely." They also were more common at a time "when I paid less heed to my health and" — does this sound paradoxical? — "when I still had the leisure for indulging myself in vast and uninterrupted mental exertions." Headaches lasted one whole day, were tolerable at rest but became "violent, stunning . . . with any circumstance that raises the blood pressure in the head, as with stooping, coughing, and so on. The pain mounts synchronously with the pulse of the temporal artery." Besides the throbbing pain these were the crucial points: the affected artery feels "like a firm cord to the touch, whereas on the left side it has a normal quality. The face is pale and worn, the right eye small and reddened." Toward the end of the attack even "the right ear becomes red and feels decidedly hot." Why bring up his own case history? It is a case in point, he said, to illustrate the recent discoveries regarding the vasomotor nerves. "The old dictum . . . that the state of the vessels determines blood distribution . . . has acquired an enormous importance in the struggle now being fought between cellular and nerve pathology.[22] This is why he brought up a relatively minor ailment, but one demonstrating the vasomotor effect of the cervical sympathetic. This is also why he first consulted his mirror, and, to make quite sure, asked a well-trained visiting colleague — of course without telling him what for — to examine his pupils at the height of the attack. "Immediately he pointed to my right pupil as the larger one of the two. The more the pupils were in the dark the more considerable was the difference, exactly as is the case when you stimulate the cervical sympathetic with the faradic current. I need not add," he continued, "that outside the attacks I have quite equal pupils." And — shades of "spinal irritation" — he found tender to pressure his (lower cervical) spinous processes in the "Regio ciliospinalis, the specific seat of the malady." Hence it "has to be a foregone conclusion that in my case of migraine there takes place a tetanus of the cervical portion of the sympathethic on the right side." But wait, was this perhaps the mere accompaniment to an essential neuralgia? Probably not. Without much hesitation Du Bois-Reymond drew the analogy between pain transmitted by the nerves distributed to the blood vessels and that produced by stimulating striated or smooth muscle. Examples are the uterus in labor pain, or the gut and ureter in a colic. The sympathetic must be the cause, and never mind, he rationalized further, that the rabbit does not scream when its cervical sympathetic is being "tetanized": these animals are just not very sensitive, their labor pains too are less severe than they are with humans. More specifically (and most interestingly in view of Harold Wolff's almost identical findings) the pain must be due to "increased lateral blood pressure against the blood vessel wall," as exemplified by the increased headache when blood pressure goes up inside the head. Similarly one might explain the pain in inflammatory conditions. (Du Bois-Reymond also drew an analogy with the "Charlie horse" type of muscle spasm, but his observation that stretching the affected muscle *increases* the pain is contrary to fact.)

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[21] Emil du Bois-Reymond, "Zur Kenntnis der Hemikrania," *Arch. f. Anat. Physiol u wiss. Med.*, 1860, 461-468.

In conclusion Du Bois-Reymond conceded that his sympathico-tonic explanation might not generally apply because in most cases the pupils are equal. After all, neuralgia of the first trigeminal branch was the prevalent migraine doctrine ever since Simon André Tissot had promulgated it in the 18th century. Another authority, Heinrich Romberg in Berlin, in consecutive editions of his neurological classic, was holding the entire brain responsible:

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[22] The "struggle" was caused by Virchow's sweeping denial that the nervous system disposes of individual fiber pathways enabling it to influence pathological events in any circumscribed area or individual blood vessel. (Rudolf Virchow, *Die Cellularpathologie in ihrer Begründung auf physiologische und pathologische Gewebelehre* (1858) (Hildesheim: Olms, 1966), pp 228-230, 257, 259, 261, 265, 282 ff.)

"neuralgia cerebralis," Romberg called it.[23] Curiously — maybe because he found them too vague and outmoded, or because Du Bois-Reymond wished to underline the originality of his own "Hemikrania sympathico-tonica," the term he was now proposing — he failed to mention any of his closer "ancestors," those authors who had entertained vascular notions and the idea of "sympathy" regarding migraine. In Switzerland there had been Johann Jakob Wepfer (1620-1695) and the more obscure Johann Caspar Anhalt (fl. 1720s), both blaming migraine headaches on cerebral vascular congestion. That the cerebral circulation was influenced by vasomotor nerves may appear as a detail that developed an old, widely applied notion and put it on a more precise basis. The excessive accumulation of fluid in a circumscribed area or organ — congestion of the brain — was used to explain not only headache but also epilepsy, its perennial congener. Congestion was of course also a feature of inflammation and fever, and it still is. Anhalt and Wepfer were only blunting the emphasis Galen has placed on the bad humors and vapors sent to the brain by various parts of the body, while sharpening Galen's other point, a mechanical one, about the communication between extra- and intra-cranial bloodvessels.[24] With Anhalt it was not the effect of a deteriorated chyle on the brain itself but its effect on the bloodvessels. They "lose their regular shape," Anhalt wrote, "they dilate or contract in such a way as to excite pain." And he cited the case of a man who "suffered in his eye from his congestion to the extent that he feared it would rupture." Vomiting brought relief. "Congenital weakness" of one side, Anhalt claimed, caused the pain to be unilateral.[25] Wepfer of Schaffhausen, renowned for his study of apoplexy, stressed the irritating effect that stagnation, even of normal serum, has on one half of the head. He spoke of increased pulsations, the drive of the arterial blood as the pain is reaching its peak, of the distended membranes; "either because the [arterio-venous] capillary tubules are excessively lax or because they admit more blood than they can rapidly absorb."[26]

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[23] Moritz Heinrich Romberg, *A Manual of the Nervous Diseases of Man* (London Soc., 1853), pp. 176-178.

[24] Galen, *De compositione medicamentorum secundum locos*, Lib. II, cap. III, *De hemicrania*. Ed. Kühn, vol. XII, pp. 591-598 Galen's pertinent short passage suggests that an excessive upward thrust of corrupted vapors and/or humors from the body to the brain is driven out into the scalp; this, he felt, may explain the surprising amount of pain and tenderness in the latter.

[25] Johann Casper Anhalt, *Dissertatio sistens rariorum casuum febris quartanae duplicis cum hemicrania feliciter curatae* (Altdorf, 1724). Not available in this country, Anhalt's "rather rare cases of double quartan fever with hemicrania and favorable outcome" are quoted from Thomas, note 5 above.

[26] Johann Jakob Wepfer, *Observationes medico-practicae de affectionibus capitis internis et externis* (Scaphusii: Schaffhausen, 1727) Observ. XLVIII, *Hemicrania periodica*, p. 130. That congestion rather than bad humor causes cerebral disorders and pain was the new mechanistic, hydraulic trend propagated by Wepfer and issued, no doubt, from 17th-century iatrophysics. An example is the doctoral thesis by one Johann

"Sympathy" on the other hand — literally a combined or shared discomfort — sympathy operates in migraine between the head and the stomach. "Sympathy of nerves" is the general subject of Robert Whytt's "remarks . . . prefixed" to his book on nervous, hypochondriac, and hysteric disorders. In Edinburgh Whytt had laid the foundation for Du Bois-Reymond, nearly one hundred years later, to mind his pupillary reflexes. It was Whytt who started the neurological trend usually connected with his successor in the chair of medicine, William Cullen. For in Whytt's words there are "very few disorders which may not, in a large sense, be called *nervous*." And they are nervous in particular because they "depend on sympathy . . . between the various parts of the body." As to migraine Whytt writes that "nerves suffer . . . and the small blood vessels to which they are distributed" — a mere assumption, perhaps, verified in Du Bois-Reymond's day, three quarters of a century later, by Jakob Henle. Blood vessels "are either affected with continual spasm, or agitated with uncommon alternate contractions and relaxations in consequence of which the patient feels a pain, straitness, fulness and pulsation about the forehead and the temples," Whytt wrote over two hundred years ago. Possessing a great gift for compromise, he combined nervous and vascular theories with the old "viscid or acrid humor obstructing or irritating the small vessels of the *pericranium* muscles of the head, or *dura mater*, and consequently the nerves . . . . ." (Whytt incidentally seems to have had cluster headaches in mind as he has the pain "generally return once a day, nearly at the same hour.")[27]

While Tissot's ophthalmic neuralgia still held sway, particularly in France, we can find even there a relatively early 19th-century variant of the vascular, or neuro-vascular, hypothesis. Louis Florentine Calmeil, the psychiatric physician devoted to neuropathology, remarked in 1839 in a dictionary, that "evidently in some subjects there is a very pronounced local hyperemia: conjunctival injection, heat in the face, swelling of the scalp, arterial pound-

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Christoph Untzer, *De doloribus capitis, scandalo medicorum difficulter removendo* (Halle: Hillinger, 1741) The title characterizes headaches as the "stumbling block"—rather than "scandal"—that "physicians find difficult to remove." Most difficult, if not most frequent, is hemicrania of which the "idiopathic" form is "purely sanguinous" and due to congestion. See Friedrich Hoffman. *Fundamenta medicinae*, "based on the mechanical principles of nature" (1695), transl L S. King, (London: Macdonald, 1971) p. 75. No doubt the dissertator was very familiar with this work· both Stahl and Hoffmann of Halle must have been among Untzer's teachers. Hoffmann states: "A hemicrania occurs when, from one part of the head where the very small veins and arteries are obstructed, the blood rushes with greater force into another part, *distends the vessels, and thus produces pain*," [my italics].

[27] Robert Whytt, *Observations on the nature, causes, and cure of those disorders which have been commonly called nervous, hypochondriac, or hysteric to which are prefixed some remarks on the sympathy of the nerves*, 3rd ed. (Edinburgh: Becket, etc , 1767), pp. IV, 298-299.

ing, frequent spontaneous local hemorrages [even]. But how can these particular nervous accidents be explained when there is no acute phlegmasia, not even ordinary simple congestion? Is not the afflux of blood due to some concomitant unknown mischief of innervation, augmented by secondary stasis in the tissues?''[28]

Side by side, then, the vascular and the neurogenic theories run through the 18th and 19th centuries, a headstart favoring the former. If for a while Tissot seems to gain on Wepfer and Anhalt, it is because Tissot discarded the humors and because he gave a more comprehensive, better documented and organized account of migraine than other nosologists of headache did. Tissot, another Swiss citizen and one of the most popular medical authorities of his day, laid down the main characteristics of migraine: the severity of its pain, its periodicity, the similarity of its attacks, its relative independence of accidental causes, its termination by vomiting. For Tissot the trigeminal was in ''sympathy'' with an upset stomach, via the brain, and he did not close his mind to ''plethora.''[29] But now, thanks to Du Bois-Reymond's authority and his rather convincing exposition, the vascular theory was decidedly in the ascendent again, first in Germany and soon also in England. Soon it also suffered a modification.

For one thing, Du Bois-Reymond himself had to concede that his pupillary dilation was exceptional. Secondly his reddened conjunctiva, hot ear, and the throbbing of his head were all hard to reconcile with a sympathetic ''tetanus,'' or vasoconstriction. They pointed in fact to the very opposite, to sympathetic paralysis. ''Until 1867 pale migraine held absolute sway,'' a critic said later,[30] but in that year it suffered a setback, in Berlin, on eleven pages of Virchow's prestigious *Archiv*, and by a Dr. Möllendorf, a mere non-academic general physician. Möllendorf did not deny that the villain in migraine is the sympathetic. Its emotional irritation, however, is followed by relaxation, by an *anergia* of the vasomotor nerve governing the carotid artery. This sets up an arterial ''fluxion'' toward the brain, especially coming from the ''contracted or lax'' uterus during menstruation. Hence that periodic character, hence also the female prevalence. "Hemicrania, as is well known, lasts until the menopause; after this I have seen it only in old spinsters, i.e., individuals whose life and occupation have been failures," Möllendorf wrote in a familiar vein. His most telling observation pertained to the flaccid carotid artery on the side of the headache: "as if by magic" its complete compression made the pain disappear — an observation already made by Dr. Parry of Bath. Compression of the unaffected carotid increased the throbbing. There was further proof of sympathetic paralysis or vagal stimulation: bradycardia and polyuria. (Both these features were again reported by Mr. Fisher at the Royal Society of Medicine in 1919, but it was tachycardia with Dr. Gordon Holmes!) Finally Möllendorf reminded his readers that Claude Bernard had found the heads of animals hypersensitive on the side of a sympathectomy (as we say); he himself had observed dilated retinal vessels, suggesting stasis in the capillaries and increased flow on the affected side.[31]

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[28] Louis-Florentin Calmeil, ''Migraine,'' *Dictionnaire de médecine*, 2nd ed. (Paris: Béchet and Labé, 1839), vol 20, pp. 3-10.

[29] Samuel Auguste André David Tissot, *Traité des nerfs et de leurs maladies* (1778), in *Oeuvres de Tissot*, ed. Hallé (Paris, Rozier, 1800), pp. 383-402. More comprehensive than Whytt's, Tissot's is perhaps the first monograph on nervous or ''neurological'' diseases, written before the advent of neuropathology when ''neuropsychiatry'' was truly one! H. W. Bucher, *Tissot und sein Traité des nerfs* (Zürich: Juris, 1958), a valuable graduation thesis and ''contribution to the medical history of Swiss enlightenment'' manages to omit from an otherwise full bibliography of Tissot's work his most influential contribution to ''enlightened'' popular medical world literature: on masturbation. . . .

[30] Paul Julius Moebius, ''Die Migrane,'' in Nothnagel, *Specielle Pathologie und Therapie*, 1894, XII, 2, p 40.

But pain and aura make of migraine a perennial see-saw problem. What we miss from the discussion in Berlin during the 1860s is the due emphasis on the visual and other sensorimotor symptoms. For this we have to return to England and look at the development during the 1870s following Dr. Airy's summation.

Two footnotes in Hughlings Jackson's writings turn the spotlight on that decade's migraine debate. One of these notes is in support of Jackson's famous definition of epilepsy as "1) sudden, 2) excessive, and 3) temporary nervous discharges." It reads: "A term introduced by Dr. Edward Liveing in his masterly work *On Megrim* is 'nerve storm.' This term . . . has been of great value in elucidating some very complex problems in neurology."[32] Jackson's other footnote is more explicit: "I believe cases of migraine to be epileptic (sensory epilepsy). Dr. Latham thinks the paroxysm in migraine to be owing to arterial contraction in the region of the posterior cerebral artery; Dr. Liveing that there is a nerve-storm . . . a discharging lesion of convolutions evolved out of the optic thalamus . . . ." Headache and vomiting Jackson considered to be post-paroxysmal, a mere epiphenomenon.[33]

P. W. Latham was Deputy Professor of Medicine at Addenbrook's, the university hospital at Cambridge, Edward Liveing a London physician affiliated to King's College. They politely clashed in the first April issue of the *British Medical Journal* of 1872. In Latham's view the disturbance of vision is due to "defective supply of blood to one side of the brain from the contraction of the cerebral arteries, probably the middle cerebral." (Jackson corrected this to "posterior cerebral" in his footnote.) Latham speaks of "loss of tone about the cerebro-spinal system from overwork" and of the brain no longer being able to "inhibit the action of the sympathetic, a slight cause serves now to excite the action of the latter nerve." So far he sides with Du Bois-Reymond. But with Latham this causes, not pain, but the scotoma. As the patient lies down, "the blood is driven with increased force to the brain, the resistance of the arteries is overcome, the action of the sympathetic is exhausted, and the same condition results as is observed after section of this nerve. The vessels become distended, the head throbs. . . "[34] In short, the pain is explained in the manner of Möllendorf, and the discrepancy with Du Bois-Reymond resolved by invoking a time sequence where the dilatation of cerebral arteries follows their constriction. Latham imagined that there are different degrees of contraction and relaxation in individual patients explaining why scotoma may occur without pain and vice versa, or why the condition may or may not be strictly unilateral.

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[31] Möllendorf, "Ueber Hemikranie," *Arch. f. Pathologie (Virchow's)*, 1867, *41*: 385-395

[32] John Hughlings Jackson, *Selected writings*, ed. James Taylor, 1931, vol 1, p. 412 fn (On convulsive seizures. *Brit Med J*, 1890, *1*: 703)

[33] *Ibid.*, p. 153 fn. (On epilepsies etc. *West Riding Asylum Med. Rep* 1876)

In the issue following the second installment of Latham's "Clinical lecture on nervous or sick-headache" the journal printed Liveing's "Observations on megrim or sick-headache."[35] It seems as if an aroused Liveing had submitted his paper as soon as he had seen Latham's. He did so in order to inform the readers not only of his contrary views but also of the fact that two years earlier he had sent a thesis on megrim to Cambridge, to the professor of medicine, and that indeed it had been "read in the school there." Only in his second installment does Latham give a nod in the direction of "my friend Dr. Edward Liveing," and refers to the "relationship, though happily a very distant one, to epilepsy. . . ." But migraine "differs widely from that terrible disorder in that it never threatens life, it is not associated with unconsciousness, and I have never head of its passing into epilepsy."

Liveing seems to have had no difficulty in refuting what he called this "determination of blood to the head — at one time very much in fashion to explain such seizures — as well as the modern vaso-motor hypothesis." So much here for Liveing's historical perspective and his anticipatory use of the word "seizures." In refutation he ophthalmoscoped a patient "going from the stage of scotoma to that of pain" without being able to see "any alteration or difference in the vascularity of the retina or optic entrance as compared with that of the same parts of the following day." In Liveing's experience there also never is "increased rigidity" of the temporal artery "in a well marked hemicranial paroxysm." And so, considering the "almost exclusively sensory character of the phenomena" and the "replacement . . . of objective impressions . . . by subjective ones . . . as well as the strictly paroxysmal and culminating character of the symptoms . . . no hypothesis seemed to me so well adapted . . . as that of a nerve storm traversing . . . from the optic thalami to the ganglia of the vagus. . . ." Liveing believed that the analogy to epilepsy is obvious, for "epilepsy is supposed to have its point of departure in a tendency to explosive discharge in the motor tract of the medulla oblongata. . . ." In conclusion he was "not at all disposed to deny that disorders of local circulation occur in the course of megrim . . . but I regard them among the least constant and regular of the phenomena, and certainly not as essential. . . ."

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[34] P W Latham, "Clinical lecture on nervous or sick-headaches," *Brit Med J* , March 23, 30, 1872, *1* 336-337, 305-306

[35] Edward Liveing, "Observations on megrim or sick-headache," *ibid* , April 6, 1872, pp 364-366

Liveing's book *On Megrim* came out in the following year. As one of his spiritual sponsors he quotes Marshall Hall, the pugnacious pioneer of the spinal reflex, who had written in 1849 that "Nothing is so common — nothing is viewed as of such trifling import — as the seizure termed 'Sick-headache.' Yet I have known 'Sick-headache' issue in paroxysmal attacks of a very severe nature, both apoplectic and epileptic."[36] (Elsewhere Hall considered migraine as beginning with an irritation and ending with venous stasis.)[37] Liveing's monograph is a gallant — some felt quixotic — attempt at lumping together into one morbid entity every condition featuring "attacks" — i.e. "nerve storms." As a historical survey the book is unsurpassed, basic for all subsequent writers, and hard to come by, worthy of a reprint.

By and large British clinicians such as Wilks and Brunton were on Latham's side. Sir Samuel Wilks, in his popular *Lectures on Diseases of the Nervous System Delivered at Guy's Hospital*, issued in 1878, and in a paper published ten years later in the *Lancet*, doubted the association of epilepsy with migraine. He based his doubt on the failure of antipyrine in epilepsy while it was effective in migraine, and on the absence of the two conditions in the same patients, in their family histories, and even — perhaps most important to him — in the same "class" of patients.[38] (Epilepsy indeed! Was he not a gentleman? And did he not suffer from migraine?) Garrison describes Sir Samuel as an eminently truthful, handsome, charming, kindly doctor, who was the historian of Guy's Hospital and the one who coined the eponyms of Addison's, Bright's and Hodgkin's diseases.[39] The other prominent adherent

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[36] *Ibid* , note 2 above, p. 1.

[37] *Ibid.*, p 238.

[38] Samuel Wilks, *Lectures on diseases of the nervous system delivered at Guy's Hospital* (Philadelphia: Lindsay & Blakiston, 1878), pp. 425-433

[39] Fielding H. Garrison *An Introduction to the History of Medicine*, 4th ed (Philadelphia: Saunders, 1929), p. 628

of the vasomotor hypothesis — Sir Thomas Lauder Brunton, F.R.S. — also was a D.Sc. A Scot, he had studied in Germany, with von Brücke, Kühne, and Ludwig. His physiological bent was unusual for a British physician in those days; from Germany also presumably stems his advocacy of physical, i.e., military preparedness. His fame rests on having introduced amyl nitrite for dilating the coronary vessels — in angina of course (1867).[40] His own temporal artery he found at times "hard like a bit of whipcord . . . at other times . . . widely dilated and pulsating violently," and he believed in segmental variations of arterial caliber in migraine.[41]

This brings us to the second half of the 1880s when one of the most important texts of neurology appeared, perhaps the most appealing ever, Gowers' *Manual.*[42] For the worldwide reputation of Queen Square, where the National Hospital ("for the Paralyzed and Epileptic") is still located, William Richard Gowers, the supreme clinician, was as responsible as was John Hughlings Jackson, the supreme theoretician, and they have almost equally established modern concepts of epilepsy. In disagreement with Wilks and Latham, Gowers acknowledged that epilepsy and migraine were somewhat related. Yet he conceded that "the traces of a definite relation . . . are slight . . . one affection may develop while the other goes on . . . But such cases . . . emphasize the rule to which they form the exception." He praised the "admirable monograph of Dr. E. Liveing" but, in contrast to Jackson, Gowers found nerve storm "a somewhat inapt metaphor."[43] Still, he thought, the "combination of inhibition and discharge" does occur in both conditions, while the vasomotor hypothesis requires assumptions that are hard to endorse. A circumscribed arterial spasm occurring in a small, and always the same, region of the brain, giving rise to such a peculiar and uniform disturbance or discharge? It was "not only unproved but in the highest degree improbable." Nor could the throbbing shake Gowers' doubt. Altogether, "mystery still envelopes the mechanism of migraine." Treatment? Gowers had faint praise for the host of advocated analgesics and stimulants, and "drugs that cause contraction of the arteries are almost powerless; all that a full dose of ergotin does is to lessen the throbbing intensification." On the whole, nitroglycerine was the drug Gowers found most helpful when there was pallor of the face, also bromide (as in epilepsy!), and bromide combined with ergot when the face was flushed.[44]

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[40] *Ibid.*, p. 653.

[41] Sir Thomas Lauder Brunton, *On Disorders of Digestion, Their Consequences and Treatment* (London. Macmillan, 1886), p. 103

[42] William Richard Gowers, *A Manual of Diseases of the Nervous System*, 2nd ed. (Philadelphia: Blakiston, 1898), vol. 2, pp. 836-856.

[43] *Idem, The Borderland of Epilepsy. Faints, Vagal Attacks, Vertigo, Migraine, Sleep Symptoms, and Their Treatment* (Philadelphia, 1870; Brinklow, Md., 1963), pp. 76-104, p. 100.

Now ergot, known as a poison and used by midwives from time immemorial, sneaks into our context with an article in the *British Medical Journal* of 1868: "On ergot of rye in the treatment of neuralgia," by Edward Woakes. He used an aqueous extract of *secale cornutum*, or *claviceps purpurea*, the rye fungus. As we since have learned this preparation contained, in variable proportions of unpredictable efficacy, the inactive dextro-rotatory together with the active levo-rotatory form. Woakes knew indeed that ergot was a vasoconstrictor. Yet the "neuralgias" he proposed to cure with it were — besides hemicrania — the shingles, sciatica, and tic douloureux.[45] In other words Woakes subscribed to Tissot's neurogenic generalizations about migraine. Yet he admitted vasomotor implications in the class of neuralgias. Next, in 1875, a substance called "ergotine" was isolated by Tanret in France.[46] In Germany "ergotin" was advocated for the treatment of migraine by Albert Eulenburg, Professor of Medicine at Greifswald on the island of Rügen, in the Baltic. Eulenburg wrote extensively on the autonomic nervous system. In the 1870s, independently from Latham, Eulenburg arrived at a similar compromise. He postulated two classes of migraine which he called *sympathico-tonic*, "spastic," or "pale," and *angio-paralytic, neuro-paralytic*, or "red."[47] Eulenburg's "view prevailed," a critic wrote in the 1890s,[48] saying that earlier, after Du Bois-Reymond, "everything had to be tied to that bed of Procrustes, the sympathetic." Then, after Möllendorf, "a decision had to be made as to which migraine — white or red — was the correct one. Agreement was finally reached: both were equally good." Incidentally this cynic, Paul Julius Moebius, was the author of a best-seller (nine editions in so many years spanning the first decade of the 20th century) entitled *Der physiologische Schwachsinn des Weibes* ("The physiological feeblemindedness of the female"). Moebius, an assistant of Strümpell in Leipzig, and a respectable neurologist, also had developed the concepts of ophthalmoplegic migraine[49] and nuclear ophthalmoplegia.[50] (His acerbity may have been the cause rather than the result of his failure to see his *Dozentur* develop into a professorship.[51]) After describing himself in his monograph on migraine as a monist concerned with finding the psychophysical relationship in such conditions, Moebius emphatically declares: "Today there can be no serious doubt that the brain generally is the locus morbi. For even the friends of the vasomotor nerves and the great sympathetic must admit that the innervation of the blood vessels and the impulses to the sympathetic fibers of the head depend on changes of certain brain cells. . . . It is evident that the aura most definitely points to the cerebral cortex. . . . It is regarding the question of pain that the difficulties begin. To start with we know very little about the cortical areas in question. . . . Pain without a peripheral stimulus. . . ." And he began to speculate — gaining on the swings what he would lose on roundabouts, as they are all apt to do when they focus on either the nervous or the vascular system, the aura or the pain. Though professing allegiance to Liveing and Gowers, Moebius was resigned to see the vasomotor theory currently "victorious. . . . Nevertheles . . . lesions of the sympathetic do not cause migraine. . . . Parenchyma is the master, circulation the servant."[52]

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[44] Note 42 above, pp. 850-856

[45] Edward Woakes, "On ergot of rye in the treatment of neuralgia," *Brit Med. J.*, 1868, *2*: 350-361.

[46] C. Tanret, "Sur la présence d'un nouveau alcoloide, l'ergotinine, dans le seigle ergoté," *Compt. rend. Acad. Sci.*, 1875, *81*: 896-987.

[47] Albert Eulenburg, "Vasomotor and trophic neuroses. Hemicrania (Migraine)," in *Cyclopedia of the Practice of Medicine*, ed. H van Ziemssen (New York: Wood, 1877), vol. 14, pp. 3-30.

[48] Note 30 above.

[49] Paul Julius Moebius, "Ueber periodisch wiederkehrende Oculomotoriuslähmung," *Berl. klin. Wschr.*, 1884, *21*: 604-608. For "Moebius' sign" (convergence paresis in hyperthyroidism): *Zbl. f. Nervenhk.*, 1886, *9*: 356-358.

[50] *Idem*, *"Ueber infantilen Kernschwund," Munch. med. Wschr*, 1892, *39*: 17-20, 41-43, 55-58.

It is hard to write history without alluding to winners and losers. To return to ergot, the "victorious" vasomotor theory won another round in 1925 when the Swiss chemist E. Rothlin recommended ergotamine, which he had just isolated from the ergot fungus, for its "sympatholytic" effect.[53] His clinical colleague, H. W. Maier, took up the suggestion, as did several French doctors, the best known being M. A. Tzanck.[54] In 1928 Tzanck failed to notice the contradiction when he admitted on one hand that ergot had for some time been in use "to combat the vasodilatation of red migraine," while on the other hand he was not advocating it because of its paralyzing effect on the great vasoconstrictor, the sympathetic. This unceasing paradox was known to any physiologist able since 1906 to take up the paper on "Some physiological actions of ergot" by Henry (later Sir Henry) Dale, of Nobel prize fame. Dale's work began to clear up the "ergot morass" (as he later called it) by showing that a suitable preparation of the rye fungus has a double effect: it constricts blood vessels (as the sympathetic does), at the same time inhibiting the action of the sympathetic and of adrenalin on such structures as the pupil.[55]

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[51] I Fischer, *Biographisches Lexikon der hervorragenden Arzte der letzten funfzig Jahre* (Berlin· Urban & Schwarzenberg, 1933), vol. II, pp 1053-1054.

[52] Note 30 above, p 97

[53] E Rothlin, "Historical development of the ergot therapy of migraine," *Internat Arch. Allergy*, 1955, *7*. 205-209.

[54] A. Tzanck, "Le traitment des migraines par le tartrate d'ergotamine," *Bull. Mém. Soc. méd Hôp.*, 1928, *52*. 1057-1061; *ibid* , 1929, *53*: 459-497.

The benefits derived from ergotamine gave in the 1930s a fresh impetus to studying the mechanisms of migraine. This is shown in Harold Wolff's *Migraine and Other Head Pain*, a work that has remained the basis of our dealing with the disorder in theory and practice. First published in 1948, Wolff's famous monograph was hardly in need of revision for its second edition in 1963, nor would it be so now, a decade later, except for its historical slant. Not that it is totally devoid of references to the past. Thus it contains the statement, or rather the understatement, that the "implication of cranial vessels . . . was often suggested."[56] Further on, Wolff's claim that the "vascular disturbance idea has not won acceptance"[57] sounds altogether incredible in the light of all the foregoing. It is true that, in order to criticize the vascular concept, sceptics would point out the "variability in the color and temperature of the face and in the state of the arteries of the scalp as determined by the eye and the finger."[58] They still might do so were it not for the current inert notion that Wolff's is the last word on the subject. But in the first third of this century the belief in a "nervous discharge" was by no means without its critics, not to speak of the third party, metabolic speculation. The Polish neurologist Flatau attempted to reconcile all three in his 1912 large monograph.[59] No new ground was being broken in the two or three decades between Flatau and Wolff, and no old ground abandoned. Wolff could justly be proud of having experimentally confirmed the classical notion that a dilated temporal artery — the scalp rather than the brain — gives rise to a throbbing headache. But what about the transient spasm of the occipital artery that precedes the dilatation of the scalp vessels? Wolff postulated it in order to explain the visual aura. It was an unobserved phenomenon, an inference that differed in no way from the assumptions made by Latham, Brunton, and Hubert Airy. It still is that.[60]

[55] Sir Henry Hallett Dale, "On some physiological action of ergot," *J. Physiol.*, 1906, *34:* 163-206. In *Adventures in physiology, with excursions into autopharmacology* (London· Pergamon Pr., 1953), pp. XI, 34.

[56] Note 6 above, p 268.

[57] *Ibid.*, p 269

[58] *Ibid.*,

[59] Note 4 above (Flatau), p 202.

[60] L. S. Basser, "The relation of migraine and epilepsy," *Brain*, 1969, *92*: 285-300. Analysis of 1800 patients with migraine showed them to be more frequently associated with epilepsy than a control group did To explain the "migrainous march" by cortical ischemia Basser considers inadequate; he calls it origin unknown. But he believes its features are identical with Leão's "spreading cortical depression " (A. A. D Leão, "Spreading depression of activity in cerebral cortex," *J Neurophysiol*, 1947, *7*. 359-390, *ibid.*, *10*: 409-412.) This is an electrical phenomenon presumably associated with local edema (Quincke's original idea, note 4 above), but perhaps also with arterial occlusion (according to Leão). Basser's reasoning was recently taken up by Ch. D. Aring, "The migrainous scintillating scotoma," *JAMA*, 1972, *220*:519-522. O W Sacks, *Migraine, the Evolution of a Common Disorder* (Berkeley University of Calif Press, 1970), pp. 207, 219, likewise rejects local cortical ischemia in favor of "a form of centrecephalic paroxysm in slow motion," harking back to Liveing's "brain storm."

PHYSICIANS IN PRE-REVOLUTIONARY RUSSIA: PROFESSIONALS OR SERVANTS OF THE STATE?*

NANCY M. FRIEDEN

Zemstvo medicine, a system of free rural medical care, acquired an outstanding reputation in late nineteenth-century Russia. Russian physicians took special pride in the program, which they variously termed "Russia's treasure" — "our pride before the West" — "a special Russian creation."[1] A speech delivered in 1902 to the national medical society, the Pirogov Society, analyzed developments in "Medicine and Surgery in the Nineteenth Century" and focused particularly on the contributions of zemstvo physicians:

> The zemstvo physician is a . . . new type of popular physician, able to speak with the common people, to understand their needs and interests, . . . representing the ideal, the very best type of physician, who selflessly contributes to the welfare of his fellow man, sacrificing much, especially during epidemics — even his life (which happens often!) . . . . The zemstvo physician fulfills the highest Christian precepts and therefore deserves the title of "friend of humanity."[2]

Such high regard for zemstvo medicine and its practitioners, coupled with an interest in expanding the program throughout Russia, characterized a large proportion of the medical profession. Considering that only about fifteen percent of Russian physicians were employed in the zemstvos, the force of numbers alone cannot explain the broad appeal of zemstvo medicine.[3]

Zemstvo medicine established a medically sound means to approach

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* Presented at the 47th annual meeting of the American Association for the History of Medicine, Charleston, S. C., May 3, 1974. The author wishes to express her gratitude to Dr. John B. Blake, Dr. James H. Cassedy, and Mr. Albert M. Berkowitz for their many kindnesses in facilitating her use of the rich collection of nineteenth-century Russian medical publications at the National Library of Medicine.

[1] There is an extensive body of literature on zemstvo medicine, including two recent Soviet works: L. N. Karpov, *Zemskaia sanitarnaia organizatsiia v Rossii* (Leningrad: "Meditsina," 1964), and *Ocherki istorii russkoi obshchestvennoi meditsiny (k stoletiiu zemskoi meditsiny).* Sbornik statei, ed. P. I. Kal'iu (Moscow: "Meditsina," 1965). Several works by physicians who contributed to the growth of the program, and which reflect their enthusiasm for it, are: M. Ia. Kapustin, *Osnovnye voprosy zemskoi meditsiny* (Pbg : Rikker, 1889); E. A. Osipov, I. V. Popov, and P. I. Kurkin, *Russkaia zemskaia meditsina* (Moscow, 1899) (also available in French under the title of *La médicine du zemstvo en Russie* [Moscow: S. Yakowlew, 1900]) The laudatory terms were used by two active proponents of zemstvo medicine, F. F. Erisman and D. N. Zhbankov; see *F. F. Erisman, Izbrannye proizvedeniia,* ed. I. A. Arnold (Moscow: Medgiz, 1959), vol. 1, p. 35, and *Vrach,* 1896, no. 46, p. 1319, and 1897, no. 39, p. 1138.

[2] V. I. Razumovskii, "Meditsina i khirurgiia v XIX stoletii," *Russkaia mysl'*, March 1902, *23* (3):18

[3] F. A. Brokhaus, and I. A. Efron, *Entsiklopedicheskii slovar'*, *s.v.* "Meditsinskii personal," gives the figure of 14.52% for 1889.

Russia's public health problems. The zemstvos were institutions of local self-government, introduced at the time of the emancipation of the serfs and the Great Reforms in the 1860s. In the rural areas of Russia's thirty-four central provinces, where approximately three-fourths of Russia's population lived, the zemstvos held jurisdiction over such matters as health, education, and the general welfare. Previously, the central government administered local public health, maintaining decrepit hospitals that were so forbidding that they included in their registries the category, "the patients who ran away." The zemstvos inherited this inadequate system and were charged with the responsibility for public health, to be financed by local taxes. Despite innumerable obstacles, the zemstvos in conjunction with a number of capable physicians developed remarkable blueprints for free rural medical care and began to implement these programs. Where carried into practice, zemstvo medicine consisted of a network of small rural clinics staffed by salaried physicians and paramedical personnel, who were responsible for the health protection of their allotted district. The physicians were too few in number and their resources too limited to permit them to deliver medical care to the entire rural population. The strength of the program rested on its emphasis on preventive medicine. In addition to the medical care they were able to dispense, zemstvo physicians supervised epidemic controls, medical statistical investigations, vaccination, child care centers, medical check-points for migrant laborers, famine relief, and extensive programs of hygiene education.[4]

Their experience in working in rural areas enabled zemstvo physicians to develop programs geared to the specific needs of the peasant population. For example, infant mortality, a major cause of Russia's exceedingly high mortality rate, received their close attention. Statistical investigations revealed that infant illnesses increased sharply during harvest time, when many mothers worked in the fields and were forced to leave their infants poorly attended; consequently physicians encouraged the zemstvos to establish nurseries during these critical periods.[5] Similarly, acquaintance with popular practices disclosed the peasantry's habit of giving infants supplementary feedings of black bread, which could cause digestive disorders, consequent dehydration, and even death; zemstvo physicians therefore stressed the need for hygiene education to improve peasant methods of infant and child care in order to remove some of the basic causes of infant mortality.[6] In those areas where zemstvo medicine was well developed, the preventive medicine aspects of the program made it an especially valuable tool for the improvement of the health of the general population.

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[4] For a review of the first twenty-five years of zemstvo medicine, see *Zemsko-meditskinskii sbornik*, ed. D. N. Zhbankov, 7 vols., (Moscow, 1890-1896).

[5] B. B. Veselovskii, *Istoriia zemstva za sorok* let, 4 vols. (Pbg.: O. N. Popov, 1909-1911), vol. 1, pp. 320-22.

[6] Such cultural work received the epithet of "small deeds" from radicals and revolutionaries of the period; in

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By the last decade of the nineteenth century many physicians regarded zemstvo medicine as the preferred pattern for health care throughout Russia. The Moscow province zemstvo, noted for its enlightened and progressive elected leadership, had enlisted the services of outstanding physicians who developed a model system.[7] The unusual accomplishments of such zemstvo programs stimulated the medical press and medical meetings to stress the need to expand zemstvo medicine where it existed and to extend it to other areas. Numerous proposals were introduced to reproduce the program in urban areas, in the border regions where there were no self-governments, and also to adapt the program to the nation's rapidly growing industrial and agricultural enterprises. Cooperation in Moscow province between the factories and the zemstvo in providing health care for the working classes, and in Kherson province for the protection of migrant laborers, provided important pilot projects for improved methods of health protection. These successes produced enthusiastic support from physicians throughout Russia, who eagerly sought to apply zemstvo medicine techniques to their own medical work.[8]

Accustomed as we are to the vigilant independence of contemporary medical professions, it may seem strange that in the nineteenth century Russian physicians vigorously supported a system of free medical care based on the services of salaried medical personnel and controlled by the local governments. To understand this unusual situation, we must examine both the ideological and practical attractions of zemstvo medicine.

Traditional treatments of zemstvo medicine have credited the democratic and populist influences of the Reform Era as the initial stimuli for the program. Undoubtedly the emancipation of the serfs in 1861 and the movement "to the people" in the 1870s spurred physicians, as they did many other Russian intellectuals, to act on behalf of the lower classes. Some physicians

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1894 the Pirogov Society assumed direction of this work through its Commission for the Spread of Hygiene Education among the Narod.

[7] Peter Krug, "Doctors and the administration of Russian zemstvo medicine· The province of Moscow, 1864-1885" (M. A Dissertation, University of Wisconsin, 1974). For an interesting memoir by a physician who worked in the Moscow zemstvo in the 1890s and became an active Bolshevik, see S I Mitskevich, *Zapiski vracha-obshchestvennika (1888-1918)*, 2nd ed (Moscow "Meditsina," 1969), pp. 56-72 treat Moscow zemstvo medicine.

[8] F F Erisman's work in the field of factory health is discussed in V A. Bazanov, *F F Erisman, 1842-1915* (Leningrad: "Meditsina," 1966), programs for migrant laborers are described in K. I. Idel'chik, *N. I Teziakov i ego rol' v razvitii zemskoi meditsiny i stroitel'stve sovetskogo zdravookhraneniia* (Moscow "Medgiz," 1960)

who were active in zemstvo medicine recalled in their memoirs the ideological impact of the period, which impelled them to assume a commitment to social service.[9] In addition to the intellectual climate of Russia, the larger framework of philosophical and democratic developments in western Europe also affected Russian physicians. The 1902 speech cited above (p. 20) revealed an acute consciousness of the relationship between zemstvo medicine and social progress in the West. One of the most dramatic changes in the nineteenth century, asserted Professor Razumovskii of Kazan medical school, was the radical revision of concepts regarding the purpose of medicine in European society:

> Speaking of progress in medicine in the nineteenth century, we cannot confine ourselves to scientific progress, but must also consider whether medical care was widely available . . . . Medicine, pursuing its humanitarian goals, fulfills its mission only when medical care is available to all in need, regardless of station and social condition. No matter how far a country may advance in medical science, if that science be available to only a select few, that country cannot take pride in its medical progress. . . . If we assess medical progress in the nineteenth century from this point of view, we must recognize that in the history of medicine — and even of civilization — the nineteenth century occupies a distinguished position. Receiving as a legacy of the eighteenth century the principle of political equality proclaimed in France, the nineteenth century gradually brought that principle to life; in the sphere of applying medicine to life, in the course of the century the principle was extended gradually to the lower classes and received wide practical application.[10]

According to Professor Razumovskii, zemstvo medicine was an integral part of the general European movement that incorporated the egalitarian ideas of the French Revolution and realized those ideas in the realm of social welfare.

Although we need not doubt the sincerity of Russian physicians who claimed idealistic motives as the reason for their social service orientation, ideology alone cannot account for the pervasive interest in zemstvo medicine. One must also consider Russian physicians within the context of their professional development. In Russia, the medical profession followed an atypical course of growth, which set it apart from medical professions in other lands and created special needs among physicians. A brief review of the historical and legal framework of the Russian profession is therefore essential to an understanding of Russian physicians' preference for public, salaried employment in the zemstvos.

The Russian medical profession developed within the rigid confines of the state's bureaucratic structure. The tsarist government founded the first medical school in 1654 and during the following two centuries subsidized and supervised all medical education. Medicine became a career open to talents, a means for people of modest means to improve their social status through education. In the seventeenth and eighteenth centuries, physicians were sons of soldiers, cossacks, government clerks, impoverished clergymen, and physicians. In the nineteenth century even serfs were admitted to the medical schools.[11] In a circular to university officials, dated 1834, the state decreed that medical students must be informed that:

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[9] See, for example, A. P. Voskresenskii, "Iz vospominanii zemskago vracha A. P. Voskresenskago: Derevenskaia Rossiia v tsarstvovanie Aleksandra II, 1881-94," *Sovetskaia meditsina*, 1946, no. 5-6, pp. 29-30.

[10] V. I. Razumovskii, "Meditsina i khirurgiia v XIX soletii," pp. 15-16.

> . . . no other European government gives so much support to popular education as Russia; only in Russia are universities free and open to all without distinction of class, permitting those with ability to enrich their minds with useful knowledge; only in Russia does success in scholarship, diligence, and good morals, reap the rewards of special rights and privileges, and the opportunity for public service.[12]

These claims had some validity, for the state did reward its diligent scholars. The medical diploma placed the physician in the country's miniscule educated elite, granting him the opportunity to advance to a station which was usually high above the one into which he was born.[13] But membership in the medical profession also had its distinct disadvantages.

Students undergoing the five or six years of arduous medical training suffered many hardships, for their studies were difficult and their material protection often was minimal. One can surmise the students' attitudes toward their predicament in the 1711 report of the Moscow Hospital School. Of the fifty students enrolled there during the first two years of its existence, thirty-three remained, three had been dismissed, six died, and eight ran away.[14] Impoverished medical students frequent the pages of nineteenth-century Russian literature; forced to work as translators and tutors to support themselves, they are usually portrayed waiting expectantly after giving their lessons, hoping for an invitation to a hearty meal.

Graduating physicians were expected to repay the state for their education. Students entering Kazan medical school in 1849 were informed: "you are no longer ordinary citizens but state officials."[15] After graduation, physicians who had received any state assistance were obligated to work as government employees for periods ranging from two to ten years; they worked in the armed forces, in state-owned mines in the Urals, in prisons, in Siberia, or as public health officers in some desolate provincial town. Special regulations applied to the serf-physician: he was returned to his master, whom he must serve for six years before attaining his freedom.[16] Government employment was neither prestigious nor financially gratifying. It was, in fact, frequently demoralizing, for the upper ranks of the bureaucracy treated physicians with condescension and disdain. Despite these drawbacks, three-fourths of all physicians worked as public employees, because it was their only means of earning a livelihood. Few Russians could afford private medical care, and most of the physicians who could not find salaried employment earned very inadequate incomes as private practitioners.[17]

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[11] *Bol'shaia meditsinskaia entsiklopediia*, ed. A. N Bakulev, 2d ed., 36 vols. (Moscow, 1956-65), *s.v.* "Meditsinskoe obrazovanie"; *Polnoe sobranie zakonov rossiiskoi imperii*, Series I, no. 23185, 28 July 1808, Article 144.

[12] D. M. Rossiiskii, *200 let meditsinskago fakulteta Moskovskago gosudarstvennago universiteta* (Moscow: Medgiz, 1955), p. 64.

[13] V. R. Leikina-Svirskaia, *Intelligentsiia v Rossii vo vtoroi polovine XIX veka* (Moscow: "Mysl'," 1971), pp 136-38.

[14] For the report on the Moscow Hospital School, see the letter from its director, Dr. N. Bidloo, to Peter the Great, 27 February 1712, cited in Ia A. Chistovich, *Istoriia pervykh meditsinskikh shkol v Rossii* (Pbg : Iakov Trei, 1883), p. xxix. For literary portrayals of struggling medical students, see N. G. Chernyshevskii, *What is to Be Done? Tales about New People*, trans. Benjamin R. Tucker (New York: Vintage Books, 1961), and V Veresaev, *Zapiski vracha*, 4th ed. (Pbg.: A. E. Kolpinskii, 1902).

Russian laws clearly delineated the status of physicians as mere cogs in the bureaucratic machinery. Hundreds of pages of volume 13 of the Digest of the Laws comprised the Medical Statute of 1857, which enumerated physicians' multitudinous obligations. The Statute enjoined physicians to treat the poor (that is, most Russians) without charge, set an extremely low fee scale, and decreed that if a well-to-do patient so desired, he was allowed to augment his physician's fee. The state did indeed wield great power: it also decreed that all physicians must write their prescriptions legibly.[18] One unusual clause of the Medical Statute epitomized physicians' subordinate role; it stated:

> It is the first duty of every physician to be philanthropic and in every instance prepared to render active assistance to people of any rank in need of medical care. . . . Every physician in active medical practice is obligated to appear at the request of the sick.[19]

The criminal laws reinforced this clause by establishing legal punishments for physicians who did not appear in answer to a patient's request for a physician's services. The first time such an infraction of the law occurred, the physician could be fined ten rubles, the second time fifty rubles. In the third

[15] A. I. Il'inskii, "Za polstoletiia: 1841-1892. Vospominaniia o perezhitom," *Russkaia starina*, March 1894, *81* (3):42-43

[16] *Polnoe sobranie zakonov*, I, no 23185; II, no 13861, 14 October 1840; II, no. 23817, 11 January 1850, Article 3:26.

[17] Employment and income patterns of physicians are analyzed in V. I. Grebenshchikov, "Opyt razrabotki rezul'tatov registratsii vrachei v Rossii," *Spravochnaia kniga dlia vrachei*, vol. 1 (Pbg.: Ministerstvo vnutrennikh del. Meditsinskii departament, 1890), pp. 103-43.

[18] "Vrachebnyi ustav," *Svod zakonov rossiiskoi imperii*, Vol 13, part 1: *Ustav o sluzhbie po opredeleniiu ot pravitel'stva*, 1857, Articles 540, 548, 550-51, 121.

[19] *Ibid.*, Article 114. I am indebted to Dr. George Rosen for the information that in 1577 a similar regulation was issued by the Archduke Karl of Austria.

instance the fine was one hundred rubles — one month's salary for a well-paid physician in the latter part of the nineteenth century; and the physician could be dismissed from his position.[20] In 1862 there were about 8,500 physicians in Russia, giving Russia an average doctor/patient ratio of about 1/8,000; in some areas a physician might be the only practitioner for 20,000 people — all of whom had the legal right to demand his appearance when they considered medical attention necessary.[21] One can sympathize with physicians laboring under the physical pressures that were intrinsic to such inadequate conditions. But the additional threat of legal punishment symbolized the medical profession's powerless position in Russia's autocratic structure, and made that situation almost intolerable.

During the last third of the nineteenth century, vast changes occurred in Russia. The Reforms of the 1860s vitalized Russian life with the expansion of the universities, a complete revision of the judicial system, and the introduction of institutions of local self-government. The medical profession entered a period of rapid growth, reaching 25,000 by 1905; and it also became a more integrated, self-conscious, and assertive group. Thus strengthened, physicians began to attack the state's inordinate control, focusing particularly on the restrictive laws that regulated so many aspects of medical practice. In 1869 a physician argued in a government medical journal that the legal stricture that decreed that a physician must respond to every request for medical care was merely a "general statement of the ethical obligations of the profession." He deplored the fact that the public misconstrued the Statute, using it as a "means to exploit another's labor" by demanding free medical services "*ad absurdam.*"[22] In 1884 the situation had not changed. An article in a leading medical journal charged that the laws gave the public license to exploit and mistreat physicians. After two decades of rapid change under the impact of the Great Reforms, while many other segments of society gained greater rights, physicians remained saddled with outdated disabilities.[23]

When Russia's national medical society, the Pirogov Society, met for the first time in 1885, the participants revealed an acute sensitivity to their unenviable position in Russian society. One speaker noted the great contrast between their predicament and the far more prestigious position of their colleagues abroad:

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[20] *Polnoe sobranie zakonov*, II, no. 19284, 15 August 1845, Articles 1084, 1088.

[21] I K. Savitskii, "Ob ustroistve vrachebnoi posobii dlia sel'skago naseleniia," *Arkhiv sudebnoi meditsiny i obshchestvennoi gigieny*, March 1869, *5* (1): Section V, p. 9, n. 1

[22] *Ibid.*, p. 15

[23] N L. Zelanda, "Po povodu mnenii o stat'e 872 ulozhenie o nakazaniiakh," *Meditsinskii vestnik*, 1884, nos , 33-35

> England, Belgium, France, and even Germany — especially Prussia — have eliminated from their criminal codes all articles that restrict in any way physicians' free exercise of their profession.[24]

In Russia, on the other hand, such laws remained in force and were directly responsible for the "extremely difficult, poorly protected and dependent position of Russian physicians, which is one of the most desolate aspects of Russian society." Only with the removal of the offensive articles from the statute books, the Pirogov members argued in 1885, would the medical profession be assured its full independence.[25]

In 1885 the criminal laws were reissued — with no significant change in the obligatory decrees concerning physicians.[26] After much discussion in government circles and the medical press, in 1892 the government promulgated an updated version of the Medical Statute of 1857 — with very little change in the rigid controls that the state exerted over the medical profession.[27] Despite profound changes in the professional consciousness of physicians and their consequent persistent efforts to change their position vis-à-vis the state, the tsarist regime chose to remain obdurate. At the end of the nineteenth century, the government maintained its right to treat physicians as servants of the state, not independent members of a free profession.

The historical determinants of the Russian medical profession thus created an unusual pattern of medical practice. This pattern correlates directly with the fact that zemstvo medical work appealed to the vast majority of Russian physicians. Granted that there were scientific reasons for physicians to value the program, for the use of preventive medicine techniques utilized their skills to benefit large segments of the population; and granted that it also provided personal gratification to idealistic physicians motivated by the intellectual climate of the Reform Era and by the broad social movements of nineteenth-century Europe. But in addition, zemstvo medicine had other elements to commend it, for it fulfilled a specific, practical need. In contrast to traditional conditions of medical work, zemstvo medicine permitted physicians to construct a new, more independent professional role.

In the early years of the program, some physicians purposefully chose zemstvo work in the expectation that they would be able to design an occupational pattern that would be less subordinate to the controls of the central administration.[28] Although there were innumerable conflicts and restraints that impeded their achievement of this goal, by the end of the nineteenth century many zemstvos did give considerable independence to the physicians in their employ. An outstanding feature of zemstvo medical programs was the organization of public health councils, which supervised medical programs throughout the province. The councils organized annual medical meetings to plan and coordinate the programs, published medical statistics and reports, defined and regulated physicians' duties, and controlled the hiring and firing of medical personnel. Physicians and zemstvo representatives served together on the councils, and in some areas the physicians assumed the major functions because of their greater expertise.[29] With the growth of the public health councils, therefore, zemstvo physicians experienced the opportunity to administer their own medical activities, achieving a welcome control over their professional lives that was not typical of other medical employment.

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[24] I. V Bertenson, "Ob otvetstvennosti vrachei za neiavku k bol'nomu po priglasheniiu," *Vrach*, 1886, no 2, p 42

[25] *Ibid.*, pp 42-45

[26] *Svod zakonov ugolovnykh*, vol 15, part 1 *Ulozhenie o nakazaniiakh ugolovnykh i ispravitel'nykh*, 1885, Articles 872-73.

[27] *Svod zakonov rossiiskoi imperii*, vol 13· *Ustav vrachebnyi*, 1892; Article 81 repeated Article 114 of the Medical Statute of 1857, quoted above (n 19), and there were many other parallels.

Zemstvo medicine thus attracted many physicians not only because it was committed to the principle that medicine be available to all in need, but also because it responded to physicians' own professional needs. In pursuing their professional goals within the zemstvos, Russian physicians actually emulated the pattern of professionalization of physicians in western Europe. Their means were very different, but their goals were very much the same. Zemstvo medicine may have been unique within the context of European medicine, which focused primarily on private practice in the nineteenth century; but — paradoxically — zemstvo medicine also offered Russian physicians the means to gain professional autonomy similar to that enjoyed by their colleagues in the West.

The broad appeal of zemstvo medicine to physicians, placed in historical perspective, thus reveals a critical factor in the medical profession's relationship to the tsarist state. Nineteenth-century Russian physicians supported the program not because they favored highly centralized, national control over public health, but because they preferred exactly the opposite type of administration. The Russian medical profession, conceived and nurtured in an autocratic state, was disinclined to favor any system that increased the regulatory powers of the central government. Physicians therefore eagerly assisted the semi-autonomous local self-governments in their medical programs, because they perceived that in the zemstvos they could attain greater professional independence and thereby overcome some of the peculiar conditions and disabilities of medical practice in Russia. Particularly in those provinces where public health councils and annual meetings of zemstvo physicians regulated medical programs, physicians received strong protection against the intrusion of the tsarist regime into their professional lives. Small wonder, then, that almost the entire medical profession took an active interest in zemstvo medicine, striving to strengthen it where it existed and to adapt its methods to other types of medical employment throughout Russia. Locally based and often regulated by the physicians themselves, zemstvo medicine offered the best opportunity for physicians to work as members of a free profession — in pre-Revolutionary Russia.

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[28] Brokhaus-Efron, *Entsiklopedicheskii slovar'*, *s.v.* "Zemskaia meditsina," vol. 12a (1894), p 486

[29] For a careful study of the public health (sanitary) councils, see D. N. Zhbankov, *O deiatel'nosti sanitarnykh biuro i obshchestvenno-sanitarnykh uchrezhdenii v zemskoi Rossii* (Moscow: Rikhter, 1910).

*THE COMPLEAT HOUSEWIFE**

JOHN B. BLAKE

The Compleat Housewife, by Mrs. E. Smith, which appeared from the press of William Parks in Williamsburg, Virginia, in 1742, was the first cookbook printed in America. The subject of cooking, as Mrs. Smith pointed out, "being both common and universal, needs no Arguments to introduce it, . . . since there are but few now-a-days who love not good eating and drinking. . . ." But the work also included, according to the title page, a "Collection of above three hundred family receipts of medicines; viz. drinks, syrups, salves, ointments, and various other things of sovereign and approved efficacy in most distempers, pains, aches, wounds, sores, &c." The latter makes it of interest to the members of this Association.[1] I have taken its title for my text.

The Compleat Housewife was typical of a large number of books by both men and women of the 17th and 18th centuries which combined cookery and other household hints with medical recipes. Among the earliest English examples was an anonymous *Closet for Ladies and Gentlewomen* printed in 1608, which included, along with "the art of preserving, conserving, and candying," "divers soveraigne medicines and salves for sundry diseases."[2] Rather more substantial is a work by that indefatigable compiler of books on horsemanship, farriery, hunting, and agriculture, Gervase Markham, whose *English Huswife* first appeared in 1615. It contained, according to the title page, "the inward and outward vertues which ought to be in a compleate Woman," beginning with physic and cookery, and progressing through distillation and the making of perfumes to dairying, brewing, and baking.[3]

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* Presidential Address, American Association for the History of Medicine, 47th annual meeting, Charleston, S. C , May 3, 1974

[1] Waldo Lincoln, *American Cookery Books 1742-1860*, revised and enlarged by Eleanor Lowenstein (Worcester: American Antiquarian Society, 1954), p 7. The quotations are from the London, 1739, edition

[2] Title page, London, 1632, edition For the printing history of this and other 17th-century cookbooks, see especially A. W. Pollard and G R Redgrave, *A Short-Title Catalogue of Books Printed in England . . . 1475-1640* (London Bibliographical Society, 1926) and Donald Wing, *Short-Title Catalogue of Books Printed in England . . 1641-1700* (New York: The Index Society, 1945-51). I have also relied extensively on Katherine G. Bitting, *Gastronomic Bibliography* (San Francisco, 1939); André L Simon, *Bibliotheca Gastronomica* (London: Wine and Food Society, 1953); and Georges Vicaire, *Bibliographie gastronomique* (London. Holland Press, 1954).

[3] For Markham's extensive writings, see F. N. L Poynter, *A Bibliography of Gervase Markham*

Markham attributed his collection to a manuscript that belonged to an "Honorable Countesse," and for some curious reason attributions to the nobility became particularly popular during the Commonwealth period. Thus Owen Wood's *Alphabetical Book of Physicall Secrets*, published in 1639, reappeared in 1658 as the *Choice and Profitable Secrets* of the deceased Duchess of Richmond and Lenox, whose person, bedecked with jewels and lace, shines forth from the frontispiece. Perhaps this change was intended to compete with the new and popular *Choice Manuall, or Rare and Select Secrets in Physick and Chyrurgery*, supposedly prepared by the Countess of Kent. The Countess, incidentally, was described in her own time as "a lady of uncommon virtue and piety," and she was a close friend of the eminent scholar John Selden. The book, containing cookery as well as medicine, was first printed in 1653, two years after her death.[4] Even this was eclipsed in 1655 by *The Queens Closet Opened*, allegedly transcribed from the very recipe book of Her (exiled) Majesty Henrietta Maria, consort of the late Charles I. Since editions published after the Restoration dropped the personal references to the queen, we may feel some skepticism about this royal contribution. Yet it does appear that the nobility were involved in this kind of practice. The famous Sarah Churchill, Duchess of Marlborough, was called by a contemporary "an excellent Physician,"[5] and an elegant manuscript book of "Receipts Relating to Phisick & Surgery" in the National Library of Medicine records that "those marked with: M: P: [were] experienced by my Lady Duchess."

At about this time Hannah Woolley began issuing her books on domestic economy. Born in 1623 and thrown on her own at age 14, Hannah had learned something of the art of healing from her mother and sisters. Largely self-educated, she published her first cookbook, *The Ladies Directory*, in 1661. *The Queen-like Closet* followed in 1670 and her best known book, *The Gentlewoman's Companion*, in 1675. No duchess nor ever claiming to be one, Hannah Woolley was a practical woman who supported herself by hard work. Incidentally, she was also a firm believer in education for women.

> The right education of the female sex [she wrote], as it is in a manner everywhere neglected, so it ought to be generally lamented. Most in this depraved later Age think a

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1568?-1637 (Oxford. Oxford Bibliographical Society, 1962). *The English Huswife* (sometimes *Housewife*) is described on pp 128-131, 152-157

[4] Doris May Stenton, *The English Woman in History* (London: Allen & Unwin, New York MacMillan, 1957), pp 60-61 The 22nd edition, so-called, of the *Choice Manuall* appeared in 1726

[5] Elizabeth Burton, *The Pageant of Georgian England* (New York: Scribner's, 1967), p. 251 Anne Murray, later Lady Halket (1622-1699) was also known for her skill in medicine and surgery Stenton, *English Woman*, pp 161-162

woman learned enough if she can distinguish her Husband's bed from anothers. . . . Vain man is apt to think we were meerly intended for the world's propagation and to keep its inhabitants sweet and clean; but by their leaves had we the same Literature, he would find our brains as fruitful as our bodies. Hence I am induced to believe that we are debarred from the knowledge of humane learning lest our pregnant wits should rival the touring conceit of our insulting Lords and Masters.[6]

Following Woolley's example, women began publishing cookbooks and other works on domestic economy under their own names in increasing numbers during the 18th century. Among the more successful were Mary Kettilby's *Collection of Above Three Hundred Receipts in Cookery, Physick and Surgery*, 1714; *Mrs. Mary Eales's Receipts*, 1718, published later as *The Compleat Confectioner*; Mrs. E. Smith's *Compleat Housewife*, first printed in London in 1727; and Sarah Harrison's *The House-Keeper's Pocket-Book; and Compleat Family Cook*, 1733, all of which went through many editions. Besides these books combining cookery and medicine, there were others containing medical receipts alone but addressed to housewives. They should be distinguished from the more venerable books on diet and regimen designed to teach individuals how to live a healthy life and from more comprehensive domestic medical guides.

One can approach these works from a number of points of view. Although it is not our primary concern here, they obviously provide evidence of the general role of women in society. Clearly it was in the home. As described by Richard Brathwaite in *The English Gentlewoman* in 1631, "Some bookes she reads, and those powerfull to stirre up devotion and fervour to prayer; others she reads, and those usefull for the direction of her household affaires. Herbals she peruseth, which she seconds with conference." Their duties as housewives were manifold, and included the preparation of medicines and treatment of the sick for serious as well as minor ills. Even Clement Barksdale, in his *A Letter Concerning a Colledge of Maids*, 1675, proposed that ladies should learn, along with languages, history, and practical divinity, the use and virtues of herbs.[7]

It becomes, I believe, a matter of some interest to examine the reasons set forth for presenting this medical information to housewives. From Joseph Addison in *The Spectator* we get a hint that perhaps the cookery required the medicines. "When I behold [he wrote] a Fashionable Table set out in all its Magnificence, I fancy that I see Gouts and Dropsies, Feavers and Lethargies, with other innumerable Distempers lying in Ambuscade among the dishes."[8] The compilers, however, generally professed to publish their works, sometimes with great reluctance, for the common good. Thus in 1632, Peter Levens, in *A Right Profitable Booke for All Diseases*, asked,

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[6] Stenton, *English Woman*, pp. 188-191. The quotation is from the introduction to *The Gentlewoman's Companion*.

[7] Stenton, *English Woman*, pp. 145, 186-188.

> what reason is it that we shoud keepe secrete among a few, the thing that was made to be common to al? Christ sayth, no man lighteth a Candle to cover it with a bushel, but setteth it to serve every mans need . . . . As for the knowledge of medicines, comfort of hearbs, maintenaunce of health, prosperitie and life, they be his benefits & proceed of him, to the end that we should in common helpe one another; and so to live together in his Lawes and commandements . . . .[9]

Mary Kettilby assured her readers that "as the desire of doing Good, was the sole Motive that at first engaged me in this Work," she had spared neither labor, time, nor money in her effort to expose to the world "such invaluable Secrets, as Others, of a less generous Temper, would have taken a Pride, and made almost a Merit, of Concealing." She recommended her work to the clergy, as a means of reinforcing their spiritual message. More particularly, she offered thanks to the "Fair Sex,"

> who, whether it be from the greater Tenderness of their Natures, the greater Opportunities of Leisure, or Advantages of acquiring Experience . . . are always found most Active and Industrious in . . . Charity. Oh, Heavenly Charity! [she continued] How often have I seen thee employ the Rich in waiting upon the Poor, and Mistresses in Nursing and becoming Hand-maids to their own Servants? How often have I seen thee make Persons of the Highest Quality Kneel down to the Dressing of a Poor Man's Wound: Those of the greatest Niceness and Delicacy of Sense, Visit the Chambers of such, whose Poverty and Offensive Distempers have render'd them Nauseous and Loathsome beyond expression: And those of Tender and Weakly Constitutions walk through Midnight-Frosts, to the Assistance of some Poor Neighbouring Woman in her Painful and Perilous Hour?[10]

The theme of charity proclaimed by Mistress Kettilby runs persistently through preliminary epistles to the reader in these books. Mistress Smith, for example, believed that her recipes were "very proper for those generous, charitable, and Christian Gentlewomen" who wished to help "their poor Country Neighbours" in time of sickness. This would give them "the Pleasure of seeing the Good they do in this World, and . . . good reason to hope for a Reward (tho' not by way of Merit) in the World to come."[11] However, one must admit that the charitable impulse was sometimes mediated. *The Compleat Servant-Maid* of 1683 included medical receipts for those who aspired to be housekeepers to "Persons of Honour or Quality" so "that they may be able to help their maimed, sick and indigent Neighbours; for commonly, all good and charitable Ladies make this a part of their Housekeeper's business."[12]

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[8] Quoted in Elizabeth Burton, *The Pageant of Stuart England* (New York Scribner's, 1962), pp. 208-209

[9] "To the reader."

[10] Mary Kettilby, *A Collection of Above Three Hundred Receipts in Cookery, Physick and Surgery* (2nd ed , London, 1719), preface. The book was "Printed for Mary Kettilby" but she is generally credited with being the compiler

[11] E. Smith, *The Compleat Housewife: or, Accomplish'd Gentlewoman's Companion* (9th ed., London,

The emphasis on charity was closely tied to the unavailability of physicians. Thus Owen Wood claimed that his collection was published "for the benefit, most especially of House-holders in the Country, who are either farre remote, or else not able to entertaine a learned Physician."[13] Even as late as 1794 Maximilian Hazlemore, in *A Complete System of English Housekeeping*, added a collection of medical recipes "which will be particularly useful in the country, where frequent opportunities offer of relieving the Distressed, whose situation in life will not enable them to call in Medical Aid."[14] Obviously unavailability of physicians might be due more to the inability of the poor to pay for them than simply to a lack of physicians in the smaller towns and countryside. Writers like Mrs. Kettilby used this fact to disarm criticism from the "faculty." They could hardly object, she wrote, to her providing medical receipts for the benefit of persons who were "neither within the Reach of their Visits, nor in a Capacity of Gratifying their Trouble."[15]

Although a few authors, like the well-known William Salmon, whose *Family Dictionary* combined cookery and medicine, promoted their own works by attacking "quackery" in the medical profession, more frequently the authors purported to have the sanction of physicians. Owen Wood obtained an endorsement from "Alexander Read, Doctor of Physick" for his collection.[16] The compiler of *The Family Magazine* in 1741 averred that the medical section was based on the commonplace book of her late brother, "whose Practice and Success in Physick was second to none in all the populous Towns around the Place of his Residence," and that it had been

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1739), preface. Other examples include Owen Wood, *An Alphabetical Book of Physicall Secrets* (London, 1639), title page; *The Queens Closet Opened* (London, 1674), To the reader, George Hartman, *The True Preserver and Restorer of Health* (London, 1682), To the reader.

[12] *The Compleat Servant-Maid, or, The Young Maidens Tutor* (3rd ed., London, 1683), pp 39-40. This is sometimes attributed to Hannah Woolley

[13] *Alphabetical Book*, title page.

[14] Hazlemore, *Domestic Economy, or, a Complete System of English Housekeeping* (London, 1794), p iv.

[15] *Collection of Receipts*, preface.

[16] *Alphabetical Book*, To the reader. The 4th edition, entitled *An Epitome of Most Experienced, Excellent and Profitable Secrets Appertaining to Physick and Chirurgery* (London, 1653) adds the alleged approval of Dr. John Johnson but also of "a skilfull Gentlewoman."

reviewed and approved by another learned physician.[17] Another *Collection of Receipts* printed in 1754 was advertised as "the practice of the late eminent Dr. Bloxam" (who remains otherwise unidentified) and "all Genuine, being the Notes for Prescriptions . . . never before printed or any where to be found but on Apothecaries Files."[18]

Other techniques were also used to bolster the alleged value of these collections. Besides the books attributed to Duchesses, many individual receipts were ascribed to members of the nobility and even to kings and queens. *The Queens Closet Opened* fills three pages with a list of the personages who approved the various formulas, starting with Edward VI, Elizabeth I, and Charles I, and continuing with the Archbishop of Canterbury, the Earl of Arundel, Sir Walter Raleigh, the Countess of Worcester, and assorted Ladies, as well as twenty-five doctors, four surgeons, and one apothecary. The earlier books, especially, also touted their receipts as rare and costly secrets. Such were the recipes for sore eyes published by Mary Kettilby in 1719, which had "cost a Gentleman Fifteen Hundred Pound, who had them of a Jesuit, who came from *Rome*, to Cure his Daughter's Eyes."[19]

Certain characteristics of the compilations are readily apparent: they represent cookbook medicine in more ways than one. Typically they provide a large number of recipes for compound drugs following one of two formats: either, a disease or condition is named, followed by a recipe for its cure; or, a compound drug is named and its preparation described, followed by a list of the conditions it would cure. Almost never do we find any general discussion of a theory of disease, of symptoms, or of the rationale for treatment. Most of the recipes represent polypharmacy at its worst, being compounded of a multiplicity of ingredients. The drugs are primarily herbal. Many are distilled, and must have had a high alcoholic content. Some animal drugs were included, but only occasionally do we find filth drugs. A few mineral drugs were also used from time to time. Intended for those in the country, the recipes were chiefly from ingredients that could be grown or gathered in England, although some were presumably available only by purchase from an apothecary. A minority are of an obvious sympathetic or magical nature.

It is also quite apparent that the compilers of these medico-cookery books borrowed extensively from one another. *The Compleat Gentlewoman and Chamber-Maid's Closet Newly Opened*, printed about 1700, might better have been named "again reopened," because every medical recipe in it save one had already appeared in *The Accomplish'd Lady's Delight*. More generally one finds certain favorites continually reappearing. Sometimes the recipe is attached to the name of some particular discoverer, or alleged discoverer, such as Dr. Stevens's water. Nearly every work consulted up to the mid-18th century included this cordial, sometimes twice over. In a typical case the housewife was directed to take a gallon of "good Gascoign Wine" and to add varying amounts of ginger, galingale, "cancel," nutmegs, grains of paradise, cloves, aniseed, caraway seeds, sage, mint, red roses, thyme, pellitory, rosemary, wild thyme, camomile, and lavender; to let them stand twelve hours, and then to distill in an alembic. According to the Countess of Kent,

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[17] Arabella Atkyns, pseud , *The Family Magazine* (London, 1741), pp vi-xii.

[18] *A Collection of Receipts in Physic, Being the Practice of the Late Eminent Dr. Bloxam* (2nd ed . London, 1754), p. 1

[19] *The Queens Closet Opened* (London, 1658), preliminary pages; Kettilby, *Collection of Receipts*, part 2, p 61.

> The Vertues of this water are these; It comforteth the spirits vitall, and helpeth the inward diseases which come of cold, and the shaking of the Palsie, it cureth the contraction of sinnews, and helpeth the conception of women that be barren, it killeth Wormes in the body, it cureth the cold Cough, it helpeth the tooth-ach it comforteth the stomach it cureth the cold Dropsie, it helpeth the stone it cureth shortly the stinking breath, and whoso useth this water enough, but not too much, it preserveth him in good liking making him young.[20]

The ingredients of Dr. Stevens's water tend to vary somewhat from one cookbook to the next, as do the conditions for which it was recommended, sometimes because of careless copying.[21] Nevertheless, as late as 1754 it was still said to be "a great Cordial, it strengtheneth the Brain, is good in all Faintings, Sinkings of the Spirits, Palsies and Convulsions, helpeth Digestion, killeth Worms, helps a weak Stomach, is good in the Stone and Gravel, and of great Service join'd to other Remedies in the Dropsy."[22]

It is not surprising, however, to find Dr. Stevens's water still recommended in a home medicine book of 1754. It was still to be found in the London *Pharmacopoeia* of 1724 just as it had been in the first edition of 1618. When a committee of the Royal College of Physicians set about reforming the *Pharmacopoeia* in the 1740s, they dropped this and most other compound waters only after considerable discussion and reexamination, when they finally concluded that "The best parts of *aqua Stephani* are to be found among the waters, the committee have here put down, which in this water are hurt by too numerous a composition."[23] Thus did this ancient cordial disappear from the cookbooks almost as soon as it did from the *Pharmacopoeia*.

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[20] Elizabeth Grey, Countess of Kent, *A Choice Manuall, or Rare and Select Secrets in Physick and Chirurgery* (2nd ed., London, 1653), pp 65-66.

[21] For example, "old dropsy" in Markham becomes "cold Dropsie" in the Countess of Kent, while "cold Cough" becomes "cold Gout" in *The Queens Closet Opened*. Markham, *The English House-Wife* (London, 1637), pp. 54-55; Countess of Kent, *Choice Manuall*, pp 65-66; *Queens Closet Opened* (1658), pp 87-88

[22] *Collection of Receipts in Physic*, p 12.

Other remedies that keep reappearing are not referred to some personal discoverer, but range back in history to antiquity. In the case of "falling sickness," for example, peony root, mistletoe, and human skull keep recurring, in various combinations together and with other drugs. All were ancient remedies of at least partially magical origin. The Countess of Kent, for example, advised wearing peony roots about the neck as had the legendary Osthanes. A more typical recipe, from Mrs. Smith's *Compleat Housewife*, called for powdered skull, cinnabar, antimony, peony root, dried frog's liver, salt of amber, conserve of rosemary, and enough syrup of peonies to make a soft electuary, "of which," she directs, "give the quantity of a large nutmeg every morning and evening," followed by water of lily of the valley, "three days before the new moon, and three days before the full moon." Several 17th-century recipe books advised powdered peacock dung in succory water for falling sickness, but such remedies disappeared from most 18th-century cookbooks, just as they did from the professional works of physicians. Curiously *The Family Magazine* of 1741, a book of housekeeping, cookery, and physick, which retains recipes using peacock dung, human skull, and earthworms, is also the first of those consulted to recommend wild valerian root. This drug had been introduced by Fabio Colonna in the 16th century, but came into vogue among medical writers only in the 18th century. The *Pocket Herbal* of Dr. John Chambers, printed in 1800, still reported that the root of valerian was a notable cure for epilepsies and "a very considerable article in modern prescription for those cases."[24]

To see how the complete housewife was instructed to treat a more common disease we may turn to malaria. That term was not itself used in the household books of that period, but we may so interpret the regular intermittent agues. Thus Markham particularly enjoined the housewife to know the "more familiar and ordinary" fevers and agues "as the *Quotidian* or daily Ague, the *Tertian* or every other day Ague, the *Quartaine* or every third dayes Ague, the Pestilent, . . . And lastly the accidentall Fever . . . ." Markham's suggested remedies were few and relatively simple, but most compilers, as befits the importance of the disease, offered multiple remedies. In a magical mood, *A Closet for Ladies* in 1632 recommended the herbs hartshorn, plantain, and orpine beaten with wine and laid on a cloth to be bound to the wrist two hours before the fit came on, and at the same time hanging nine roots of hartshorn in a silk bag about the neck. Alternatively, one might bind to the wrist a red onion cut small and 56 grains of pepper. Owen Wood in 1639 suggested a plaster of leather pricked full of holes and spread with Venice turpentine, rue, and frankincense to be laid on the wrist; or, nine roots of maidenweed put in a bag and hung about the neck nine days, "then burne the bagge and roots . . . ." Less magically, but presumably no more effectively, Wood also suggested burr roots and peppercorns pounded and boiled in ale with a bit of treacle, "drink it warme and sweat two houres." Failing these, Wood also offered eleven other cures for ague, most of them considerably more complex than the ones given above.[25]

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[23] *Pharmacopoeia Collegii Regalis Medicorum Londinensis* (London, 1724), p. 9; Royal College of Physicians, *A Draught for the Reformation of the London Pharamacopoeia* ([London], 1742), pp. viii-ix, 105; R. C. P., *The Plan of a New London Pharmacopoeia* ([London], 1745), pp. xlvi-l.

[24] Countess of Kent, *Choice Manuall*, pp. 56, 172; Smith, pp. 309-310; *The Accomplish'd Lady's Delight in Preserving, Physick, Beautifying, and Cookery* (London, 1675), p. 134; *Compleat Servant-Maid*, p. 53; Atkyns, *Family Magazine*, part 2, pp. 89-93; John Chambers, *A Pocket Herbal, Containing the Medicinal Virtues and Uses of the Most Esteemed Native Plants* (Bury, etc., 1800), p. 234; Owsei Temkin, *The Falling Sickness* (2nd ed., Baltimore: Johns Hopkins Press, 1971), pp. 13, 238-239.

In the following decades, plasters laid on the wrists continued to be popular, although *The Kitchin-Physician* in 1680 allowed that "Others do more commend a Salve made of Earth-worms boyled in Goose-grease," to be applied to the patient's temples. Unlike peony root and mistletoe for epilepsy, there seem to have been no regularly recurring ingredients in the recipes for ague until at last the Jesuit's bark appeared. Mrs. Smith's work was among the first of the cookbooks to recommend this drug, in combination with salt of steel, Jamaica pepper, and molasses, "To cure an intermitting Ague and Fever, without returning." However, she also suggested a plaster made of black soap, gunpowder, snuff, and brandy; or, a plaster of Venice turpentine and hellebore roots; as well as Virginia snakeroot in sherry, an infusion of aloes in brandy, and sugared rose-water with orange juice. Most of Mrs. Smith's successors included at least one recipe with bark, and manuscript recipe books also suggest that it was regularly accepted into domestic practice early in the 18th century.[26]

While the cookbooks thus pick up new remedies like valerian and Jesuit's bark and occasionally drop old ones like Dr. Stevens's water, only rarely do we find a note of skepticism amidst the myriad proven cures. Markham noted early in the 17th century that "the falling sickness be seldome or never to be cured," but proceeded to give a couple of recipes anyway, one of which consisted chiefly of powdered dried moles. Mary Kettilby a century later reported a similar recipe for convulsions and added: "I dare say this is an approv'd Receipt, because I had it from a very choice Hand; but I should fear 'twould be impossible to make a young Child take so much of so loathsome a Thing as this Powder must needs be."[27] Such doubts appear to be few and far between. More generally the compilers exhibited a degree of "critical acumen" — to borrow a phrase from Dr. Lester King — that is to be associated with the suggestion: "If a Serpent be crept into the body of any being asleep, having his mouth open, nothing is better than to receive through a funnel in the mouth, the smoak of an old shoo-sole . . . *probatum est.*"[28]

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[25] Markham, *English House-Wife*, pp. 5-8; *A Closet for Ladies and Gentlewomen* (London, 1632), sig E8v-E9r, F9r; Wood, *Alphabetical Book*, pp 9-17.

[26] *The Kitchin-Physician: Or, a Guide for Good-Housewives* (London, 1680), pp 73-75; Smith, *Compleat Housewife* (1732), pp. 257, 273, 303bis-304bis. Bark is mentioned in a number of manuscript recipe books in the National Library of Medicine.

Uncritical compilation is, in fact, one of the most obvious characteristics of these works. Authors borrowed from each other, as we have noted, and picked up much from medical writers — such as the *aqua Stephani* and Dr. Mead's recipe for the bite of a mad dog. The eclectic nature of the sources is especially apparent in some of the many manuscript collections of recipes — medical and otherwise — made by the ladies themselves or their husbands. Thus one R. O. Gascoigne recorded that the efficacy of tobacco ashes in the cure of dropsy discovered by none other than Dr. Garden of South Carolina had been confirmed by several accounts. This she copied (along with several other recipes) from Mrs. Neale's book.[29] E. Ashby, whose receipt book dates from the early 18th century, conveniently noted on the inside back cover his most frequent sources. These included:

Mrs. Mariamny Packer the Travelling Doctress.

Richard Cromwel's Legacy to his Country of Physical & Chyrurgical Receipts. He was sometime a souldier & chyrurgion in the late D. of Monmouth's army & Since of their Present Majesties, He was Executed at Leichfield for murder July 23, 1691. The Titule of the Book is the Happy Sinner pr. 1 s.

Aunt Frances Majors Receipts.

Madam Sparks's Receipts a great Doctress in Pater Noster Row that kept her Coach & 6 Horses. Given me by Aunt Majer.

Mary Burton a Traveller, the mother of Edmund Horton that shews the Postures [i.e., a contortionist].

The Rd. Mr. Isaac Taylor of Bosworth.

Mr. Sherard Serjent's Receipts of Melton.

Rembert (i.e Robt.) Dodoens History of Plants or Herbal he was Physitian to the Emperer.[30]

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[27] Markham, *English House-Wife*, p 14; Kettilby, *Collection of Receipts*, part 2, pp 78-79

[28] Lester King, "Commentary," in John B Blake, ed., *Safeguarding the Public* (Baltimore: Johns Hopkins Press, 1970), pp. 83-87; *Kitchin-Physician*, p. 81.

[29] Medical receipe book, p. 43, in National Library of Medicine, shelfmark B 132. Alexander Garden's "account of the use of the ashes of tobacco, in the cure of dropsy" is in *Medical and Philosophical Commentaries*, 1784, *1* (2d ed). 330-331, first published 1775

[30] E. Ashby, Receipe book, in National Library of Medicine, shelfmark B 1.

By the latter half of the 18th century, the cookbook trade was changing. Before then, cookbooks were nearly all addressed to persons of considerable station in life, or to their aspiring servants. After about 1750 cookbooks of this class tend to minimize and then to drop the medical recipes. "I shall not take upon me to meddle in the physical way," wrote Hannah Glasse in her *Art of Cookery*, "farther than two receipts" — Dr. Mead's for the bite of a mad dog and the famous four thieves' recipe against the plague. With the spread of elementary education, cheap family recipe books became more common, like *The Compleat Vermin-Killer* of 1777, with directions for destroying bugs, pole-cats, and badgers, for preparing medicines, for curing horses, and for making "English coffee" out of wheat. They gave increasing emphasis to saving money. Thus *The New British Jewel, or, Complete Housewife's Best Companion* in 1788 told how to make Dr. Dover's cure for the itch, which was "advertised at 1s. 6d. the bottle," for only three-pence, "which is the charge of the two ingredients." This also reminds us that an increasing number of recipes called for purchased rather than home-grown or locally gathered ingredients, thus presaging the day when the growing patent-medicine industry would largely eliminate the home production of remedies.[31]

It is interesting to note how some of these changes are reflected in the first two editions of the highly successful *Domestic Medicine* of William Buchan. In the first edition of 1769, Buchan, who had a regular M.D. degree from Edinburgh, wrote that "the laudable disposition which so universally prevails among the better sort of people in the country, of assisting their poor neighbours in distress" had first suggested to him the idea of the book. It never was, and probably never would be, within the power of half of mankind to get the assistance of physicians. For them to rely on quacks, or to blunder on in the paths of their "rude forefathers," was equally dangerous. The "ignorant rustic" was prone to place his confidence in something mysterious — in herbs gathered under the influence of planets, in charms, or in quack nostrums. His book would help ladies, gentlemen, and the clergy to root out these prejudices. Their advice would be better received by the poor ("their dependents and inferiors") than the advice of physicians; they could teach the poor proper regimen and the dangers of superstition. Three years later, in the preface to his second edition, Buchan again called for the diffusion of medical knowledge so that people might live more healthfully, but he no longer encouraged country gentlewomen to treat ignorant rustics with medicines. Instead he urged them to provide good nursing care. Even in his first edition, Buchan emphasized prevention and cautioned against the good women who plied smallpox patients with saffron and marigold teas, cordials, wine, and brandy to "throw out the eruption" and urged instead a light diet, cleanliness, fresh air, and keeping the patient in a bed by himself.[32]

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[31] [Hannah Glasse], *The Art of Cookery, Made Plain and Easy* (new ed., London, 1770), pp v, 328-29, *The Compleat Vermin-Killer* (2nd ed., London, 1777), title page, p. 86 [i.e., 82], *The New British Jewel* (London, 1788), p. 59. Attacking apothecaries' prices was not entirely new: for example, Gideon Harvey, physician to Charles II, told how to save money by making medicines at home (but not what to prescribe) in *The Family Physician, and the House Apothecary* (London, 1676). Medical recipes continued to appear in some cookbooks during the 19th century and domestic medicine books proliferated, especially in America; mostly they were aimed at poorly educated classes and sparsely settled areas.

In the preface to a botanical work written a few years later by another physician, the author took note that many readers might be surprised to find so little information on the medical virtues of the plants. The superstition and ignorance of former ages had given rise to all kinds of miracles, he explained, while the fashion of combining many ingredients rendered the efficacy of any of them doubtful until "at length every common Plant was esteemed a cure for almost every disease." We could learn little, he continued, from previous experience and might better take up the subject anew and build only on well conceived and executed experiments. Yet the author was not above learning of the medicinal uses of plants from the meanest of mankind, when they were used uncompounded. In 1785 he demonstrated his sincerity by introducing the use of the foxglove in the treatment of dropsy.[33]

About the time that Withering was suggesting a new and critical approach to plant drugs, another essayist, James Makittrick Adair, was penning an attack on "Lady Doctors." In days gone by, he wrote, when men of rank spent most of their time at country mansions, the mistress necessarily became a Lady Bountiful, and from preserving and pickling turned to the preparation of plasters, salves, and surfeit waters. With much condescension she visited and dispensed to the sick and charitably supplied other of their wants. But now there were parish officers to oversee the poor and charitable hospitals and dispensaries for the sick. It was time, wrote Adair, for the ladies to retire.[34] James Parkinson also, convinced that many lives were lost by delay in applying for medical aid "and by improper treatment of diseases by domestic practitioners," expressed similar warnings against domestic medicine in his *Medical Admonitions Addressed to Families*. No doubt the growth of such opinions played a part, along with the increasing availability of physicians and the development of medical institutions during the latter half of the 18th century, in turning the charitable impulses of country gentlewomen away from playing doctor to the poor and into other channels.[35]

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[32] William Buchan, *Domestic Medicine, or, The Family Physician* (Edinburgh, 1769), pp ix-xv, 255-260, *ibid.* (2nd ed., London, 1772), preface.

[33] William Withering, *A Botanical Arrangement of All the Vegetables Naturally Growing in Great Britain* (2 v., London, 1776), vol. 1, pp. xiv-xv.

[34] James Makittrick Adair, *Medical Cautions, for the Consideration of Invalids* (Bath, 1786), pp 155-182.

Cookbooks continue to come out in ever greater profusion, but no longer contain medical receipes. Yet these outmoded books of the past do bear some relationship to problems of medical historiography and to the medical world of today. In his presidential address to this Association in 1966, Dr. George Rosen reminded us of some of the many gaps that remain in our exploration of the medical past. Medical historians, he told us, must view their subject from patients' as well as physicians' points of view. They must take into account the effect of economic conditions and institutions and the structure of the functional groups — physicians, surgeons, dentists, and others — who deal with the problems of disease "in terms of recruitment, education and training, and group organization . . ., as well as their mode of practice." Almost coincidentally Dr. Erwin Ackerknecht presented "A Plea for a 'Behavorist' Approach in Writing the History of Medicine," reminding us that study of the scientific literature of the past "teaches us relatively little" about the actual medical practice of the average physician.[36] Still less does it teach us about the actual medical practice of an even more greatly neglected, but very large body of practitioners, the housewife and mother — and sometimes even the father — engaged in the treatment of themselves, their families, and at times their neighbors.[37] Although the drugs may come over the counter instead of from the hills and dales of rural England, these practitioners are still with us today and play a significant role in the total picture of health care.

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[35] James Parkinson, *Medical Admonitions Addressed to Families, Respecting the Practice of Domestic Medicine* (2nd ed , 2 v., London, 1799), vol 1, p v. For the development of British charity during the 18th century, see David Owen, *English Philanthropy 1660-1960* (Cambridge: Harvard University Press, 1964), pp. 11-133. "In the realm of secular philanthropy," writes Owen, "the eighteenth century accomplished nothing of more ultimate importance than to lay the foundation of the voluntary hospital system . [It] marks the beginning of that productive alliance between medical care and science on the one hand and private philanthropy on the other which has contributed so strikingly to modern social advance" (pp. 36-37). As Owen shows, the mode of charity was more conservative and personal and changed more slowly in rural areas.

[36] George Rosen, "People, disease, and emotion. some newer problems for research in medical history," *Bull. Hist Med* , 1967, *41*·10-11, Ackerknecht, *J Hist Med* , 1967, *22*:211-214.

[37] J J Keevil, "The seventeenth century English medical background," *Bull. Hist. Med.*, 1957, *31*:418, and Lester S King, *The Medical World of the Eighteenth Century* (Chicago: University of Chicago Press, 1958), p 31, grant the "ladies of the manor" less than a half-page each. More extensive accounts make be found in works on the history of domestic manners or women, as Stenton, *English Woman* (note 4) and Christina Hole, *The English Housewife in the Seventeenth Century* (London: Chatto & Windus, 1953), pp. 70-86

"MEASURE OF CIVILIZATION": THE HOSPITAL THOUGHT OF JACQUES TENON ON THE EVE OF THE FRENCH REVOLUTION*

LOUIS S GREENBAUM

From the time of their publication nearly two hundred years ago, Jacques Tenon's *Mémoires sur les hôpitaux de Paris* (1788) have been cited to document the appalling conditions and inhumane treatment of the sick in the hospitals of pre-Revolutionary France.[1] While the *Mémoires* have achieved the status of a classic in the literature of medical history, their "shock" value has obscured a greater historical importance as a conscious rethinking and reformulation of the form, goals and operation of the existing hospital.

Tenon's 500-page book reaped a rich harvest of notoriety for the retiring, sixty-four year old surgeon-anatomist whose name is memorialized in a major Paris hospital and a capsule to which the muscles of the eye are attached. Overnight the *Mémoires* catapulted a little known professor of pathology of the Paris College of Surgery into the approving scrutiny of popes, emperors, monarchs, learned and medical academies, scientists, statesmen, architects, philanthropists and the reading public of literary journals all over France and Europe excited by the humanitarian implications of hospital reform.[2] Contemporaries welcomed the *Mémoires* as a definitive treatise on the design, organization and management of hospitals.[3] Its architectural and hygienic

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* Presented at the 47th annual meeting of the American Association for the History of Medicine, Charleston, S.C., May 3, 1974 Research for this paper was supported in part by NIH Grant LM 01658 from the National Library of Medicine to which the author wishes to express his appreciation.

[1] *Journal de Paris, 1788*, p. 1037; *Journal des sçavans, 1788*, p 2529-2546, *Journal Général de France, 1788*, pp. 417-418, *Spectateur national, 1789*, pp. 112-113 La Rochefoucauld-Liancourt, chairman of the Poverty Commission of the Constituent Assembly, said of Tenon's work that it was "impossible to study the hospitals without using his book each day." (*Bibliothèque Nationale de France*, Paris [henceforth cited "*BN*"], NAF 11356, fol. 108); *Procès-verbaux et rapports du comité de mendicité de la Constituante, 1790-1791*. C. Bloch and A. Tuetey, eds (Paris. Imprimerie Nationale, 1911), p 639, P -J -G Cabanis, *Observations sur les hôpitaux* (Paris, 1790), p. 2. Cf modern works: E H Ackerknecht, *Medicine at the Paris Hospital, 1794-1848* (Baltimore. Johns Hopkins Press, 1967), p. 16; G Rosen, *Madness in Society* (London: Routledge & Kegan Paul, 1968), p 164.

[2] L S Greenbaum, "'The Commercial Treaty of Humanity ' La tournée des hôpitaux anglais par Jacques Tenon en 1787," *Rev. d'Hist sciences*, 1971, *24*: 317-350

[3] *Archives de l'Académie des Sciences* (Paris). "Registre de l'Académie Royale des Sciences, 1787," fol. 377.

principles would guide the construction of the pavilion-type hospital in Europe and America throughout the next century.[4]

The *Mémoires* owed their origin to Tenon's collaboration with a team of distinguished colleagues of the Paris Academy of Sciences called upon by the government in the last three years before 1789 to propose a model municipal hospital, Hôtel-Dieu, for the city of Paris.[5] Their labors, expanded and completed in the *Mémoires*, rested on decades of hospital research carried out by Tenon.[6]

The concept of the "hospital" in France remained ambiguous to the very end of the Old Regime. Of the two large public hospitals of the French capital, the Hôtel-Dieu and the Hôpital-Général, the first was the principal infirmary of the indigent sick of Paris. Medieval and ecclesiastical in origin, it functioned, as its name denotes, as an institution of Christian charity dedicated to the shelter, spiritual comfort and treatment of the ailing poor. The second, made up of Bicêtre, La Salpêtrière and La Pitié, organized nearly a thousand years later by Louis XIV in 1656, was essentially a house of confinement and correction for thousands of society's outcasts.[7] Despite wide differences, these "hospitals" had one thing in common. Medicine, medical principles, practices and personnel, as we understand them today, were central neither to their conception nor to their operation. As Tenon aptly stated, "the art of healing has never prevailed at the planning and appointment" of hospitals.[8]

In place of these insitutions, Tenon and his Academy colleagues substituted the vision of the hospital as an acute, curative institution, in which the therapeutic needs of the sick man and the commanding requirements of health delivery dictated design, size, policy, staffing and management. As a public and secular house of healing, available to all men with health needs, the hospital's confessional, charitable, punitive quality was irrelevant. Its exclusive purpose was to effect full and prompt recovery of each patient while preventing the spread of hospital contagion to the community (viii, 181, 354). Since the preservation of life and maintenance of good health were indispensable to national strength, prosperity and social order (270, 286, 350), and since the prevailing direction of the Hôtel-Dieu was inefficient, wasteful and unyielding in its opposition to reform, it was the government's responsibility to supervise and administer large hospitals in the public interest.[9] Four years before the Poverty Committee of the Constituent Assembly Tenon and his associates adumbrated the policy of "public assistance"[10] and the "rights of suffering man" (164). Each hospitalized individual was a citizen, not the dependent poor man of the Respublica Christiana. Each was entitled equally to the basic right of life, dignity and the enjoyment of health for his own sake, his family and society. It was nothing less than "reason of state" (269) to guarantee a hospital environment conducive to healing, to reduce appalling mortality and to make hospital stays briefer so that the sick could more speedily be returned to their rightful productive place outside (283). Doctor, but scientist as well, Tenon was equally concerned with the hospital as a vehicle of medico-scientific progress and education. Its diagnostic-therapeutic mission went hand in hand with its function as a center of medical instruction and study.

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[4] A. Husson, *Etude sur les hôpitaux* (Paris, 1862), pp. 51, 67, 101, 111, 153, 209, 221, 253-263; C. Tollet, *Les édifices hospitaliers depuis leur origine jusqu'à nos jours* (Paris, 1892), p. 222; P. Vallery-Radot, *Deux siècles d'histoire hospitalière* (Paris: Dupont, 1947), pp. 51-53; E. Wickersheimer, *Les édifices hospitaliers àtravers les ages* (Paris: Palais de la Découverte, 1953), p. 23, D. Jetter, "Frankreichs Bemühen um bessere Spitäler," *Sudhoffs Arch. f Gesch. d. Med. u. Naturw.*, 1965, *49*:164-166.

[5] L. S. Greenbaum, "Jean-Sylvain Bailly, the Baron de Breteuil and the 'four new hospitals' of Paris," *Clio Medica*, 1973, *8*: 261-284; P. A. Richmond, "The Hôtel-Dieu on the eve of the Revolution," *J. Hist. Med. & All Sci.*, 1961, *16*: 335-353.

[6] *Extrait des registres de l'Académie royale des Sciences du 22 novembre 1786. Rapport des commissaires chargés, par l'Académie, de l'examen du projet d'un nouvel Hôtel-Dieu* (Paris, 1786), p. 114.

[7] E. Coyecque, *L'Hôtel-Dieu de Paris au moyen age*, vol. 1 (Paris, 1889); M. Fosseyeux, *L'Hôtel-Dieu de Paris au XVIIe et au XVIIIe siècle* (Paris: Berger-Levrault, 1912); M. Foucault, *Madness and Civilization. A History of Insanity in the Age of Reason* (New York: Random House, 1973).

[8] Letter to the Edinburgh Faculty of Medicine, August 27, 1788 (*BN*, NAF 11357, fol. 19). Cf his statement that hospital building heretofore bore no relationship to "the preservation of health and life." (*Mémoires sur les hôpitaux de Paris*, p. 148. [Henceforth cited in the text by page and enclosed in parentheses]).

Where the literature on French hospitals of the 1770s and 1780s was redolent with abstract, qualitative, even utopian generalizations,[11] Tenon and his colleagues approached the study of the hospital with the empirical caution, methodological rigor, and exact calculation of a quantitative science. In part, following the example of physics and the new chemistry, their outlook emulated Lavoisier, Laplace and Coulomb (all members of the Academy hospital committee) by precise terminology, careful measurement, experimental verification, mathematical proofs and zeal to banish metaphysics, arbitrary explanations and philosophical systems.[12] In part it embodied the clinical experience of French surgery then being taught by Tenon and others of the Paris College of Surgery and being practiced by Desbois de Rochefort, Corvisart and Desault,[13] as well as the literature of the Hippocratic revival in the years before the Revolution, which worked to achieve a "medicine of observation" elaborated by Vicq d'Azyr, Cabanis and Pinel.[14]

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[9] *Rapport des commissaires . 22 novembre 1786*, pp 85-86, 105-106. Cf. G. Weulersse, *Le mouvement physiocratique en France de 1756 à 1770*, vol. II (Paris: Alcan, 1910), pp. 269-271; G. Rosen, "Cameralism and the concept of medical police," *Bull Hist. Med.*, 1953, *27*: 21-42 Nationalization of hospital property and administration occurred on July 14, 1794. (S. T. McCloy, *Government Assistance in Eighteenth-Century France* (Durham: Duke University Press, 1946), p 202.

[10] *Rapport des commissaires . . . 22 novembre 1786*, p 25. Cf. D. B Weiner, "Le droit de l'homme à la santé — une belle idée devant l'Assemblée Constituante: 1790-1791;" *Clio Medica*, 1970, *5*: 209-223.

[11] The key literature in the fifty years before the Revolution is reviewed in M. Tourneux, *Bibliographie de l'histoire de Paris pendant la Révolution française*, vol. III (Paris· Imprimerie Nationale, 1900), § 15137-15158; M. Candille, "Les projets de translation de l'Hôtel-Dieu de Paris hors de la Cité," *Rev Assist Pub. à Paris*, 1956, *7*: 743-756, 1957, *8*: 239-263, 343-359, 433-449.

[12] L. S. Greenbaum, "The humanitarianism of Antoine Laurent Lavoisier," *Studies on Voltaire and the Eighteenth Century*, 1972, *88*: 651-675

Tenon's empirical-analytical approach to the hospital reflects the same principles of Bacon, Newton and Condillac which can be read in D'Alembert's "Preliminary Discourse" of the *Encyclopédie* or Lavoisier's *Elements of Chemistry*. Freed of irrational practices and encumbering traditions, a hospital could be drawn up according to definable physical, therapeutic and clinical principles. Since it was "an art, a factory that can be analyzed,"[15] in the spirit of Diderot's *Encyclopédie* plates and the Paris Academy of Sciences' *Description des arts et métiers*,[16] it would apply the latest advances of medicine, sanitary engineering and public administration. Since the practice of science was not detached from the humanitarian-utilitarian ideals of the eighteenth century, the hospital would be informed by an enlightened philosophy of man and society of populationists, Physiocrats, Encyclopedists and reforming statesmen.

The Academy's investigations gave scientific validation to long-standing prejudices against the Hôtel-Dieu: its unhealthy location in the densely populated center, its crowding 2500 patients and nearly 300 servants into 1200 beds, its mixing of diseases in the same wards and even the same beds, its vitiated air, deficient water, disregard of safety, unprecedented death-rate, its presence in the central city as fire-hazard, pollutor of the city's water supply and source of contagion in defiance of statutes going back to Charlemagne (115). Faced with an institution whose time-worn errors, insurmountable abuses and ossified routine rendered it inadequate to the health needs of the population and placed it beyond hope of redemption, Tenon and his fellow scientists, in Lockean tradition, would make a *tabula rasa* of the thousand-year old Hôtel-Dieu in order to build a new hospital worthy of the Age of Enlightenment. The Paris Academy of Sciences lent its enormous prestige to condemn the Hôtel-Dieu where it stood and joined its voice to the half-century struggle of enlightened public opinion and earlier governments to remove the hospital to a healthier location.

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[13] See Tenon's journals as director of the teaching clinic of the Paris College of Surgery between May and November, 1780 ("Journal de l'hospice du Collège royale de Chirurgie de Paris . . Journal des opérations et pansemens fait aux malades. . . " and correspondence with colleagues [*Archives de la Faculté de Médecine de Paris*, §2275]). Cf. T Gelfand, "The hospice of the Paris College of Surgery (1774-1793). 'A unique and invaluable institution,'" *Bull. Hist. Med.*, 1973, *47*:375-393; P. Huard and M.-J Imbault-Huart, *Biographies médicales et scientifiques* [Astruc, Louis, Desault, Bichat] (Paris· Dacosta, 1972); P. Huard, "L'enseignement médico-chirurgical," in *Enseignement et diffusion des sciences en France au XVIIIe siècle*, R. Taton, ed. (Paris Hermann, 1964), pp. 171-236; P Delaunay, *Le monde médical parisien au XVIIIe siècle* (Paris: Rousset, 1905), pp. 203-207

[14] See articles of the physicians Doublet and Colombier, "Observations faites dans le département des hôpitaux civils," in *Journal de Médicine, Chirurgie et Pharmacie, 1785*, pp. 1-16, *1786*, pp 396-405; *1788*, pp 3-14; Menuret de Chambaud, *Essais sur l'histoire médico-topographique de Paris* (Paris, 1786), pp. ii-xii. Cf. F Picavet, *Les idéologues* (Paris, 1891), pp 101-110, 174-195, C H Van Duzer, *Contribution of the Ideologues to French Revolutionary Thought* (Baltimore: Jons Hopkins University Press, 1935), pp 38-81, S. Moravia, "Philosophie et médecine en France à la fin du XVIIIe siècle," *Studies on Voltaire and the Eighteenth Century*, 1972, *89*:1089-1151; M. S Staum, "Cabanis and the science of man," *J. Hist. Behavioral Sci* , 1974, *10*:135-143

[15] He described it again as "factories to treat patients," *(BN*, NAF 11357, fol. 19).

[16] Cf. D. McKie, "Science and technology," in *The New Cambridge Modern History*, A Goodwin, ed., vol VIII (Cambridge: Cambridge University Press, 1965), p 138.

Having banished the old, the fundamental question then became how determine the "formation" and "distribution" of a new hospital (349 ff). That is, how construct and locate institutions sufficiently large, appropriate and accessible to the needs of 650,000 Parisians and the diversity of disease representative of a large, indigent urban population distributed in various workers' quarters. And how determine a rational organization of buildings, wards, appointments and services suitable to these maladies and to the needs of patients.

No work then available, Tenon complained, addressed itself to these central issues (viii). For centuries hospitals had been designed on aesthetic grounds by architects oblivious to health factors, or had been converted from ecclesiastical or other usages which, by their very nature, were unsuited to the care of the sick.[17] Wards, beds, services, personnel, furnishings were arbitrarily, often irrationally, assigned (37, 185-186). Hospitals like the Hôtel-Dieu herded thousands into old buildings constructed when the population of Paris was much smaller.[18]

Methods for answering these questions Tenon found in botany and pathological anatomy. In the tradition of the botanizer (xlviii) he gathered data on the size, facilities, patients and personnel of the 48 hospitals of Paris to which he added a good many others in France and abroad. He sought data on the proportion of sick to healthy in an urban population (xiv). Excited by the possibilities of quantification leading to statistical generalizations, such as practiced by the pioneering demographer Johann Sussmilch (1707-1767),[19] inspired by the use of the calculus of probabilities for determining the number of hospitalized sick by neighborhood,[20] and impressed by the superior recording procedures of British and German hospitals (254-260), Tenon assembled a vast body of data useful to hospital planning: vital statistics, tables of morbidity and mortality of hospital patients by disease and sex, measurements of wards, beds, windows, staircases, privies, air volume, water supply, sewage disposal, heat, light, ventilation, furnishings, hygienic and mechanical safeguards, physicians, nurses and other support personnel, administrative services, food, length of stays and patient-cost estimates when available. Convinced that the key to understanding was through comparison, and that the proper study of the hospital was in the hospital itself (x-xi), he carefully isolated and described sources of abuse which had to be avoided or supplanted by viable models in the new Hôtel-Dieu.

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[17] On these grounds he criticized two otherwise exemplary hospitals, the teaching clinic of the College of Surgery, which he labored to perfect as a model of hospital organization and surgical practice, and Mme Necker's Hospice de la Charité, a celebrated model parish hospital of Paris (52, 55-56) (Cf R. Gervais, *Histoire de l'hôpital Necker, 1778-1885* [Paris, 1885])

[18] Fosseyeux, *L'Hôtel-Dieu de Paris*, pp. 252-254

[19] For the impact of statistical studies on medicine and public health, cf R. H Shryock, "The history of quantification in medical science," *Isis*, 1961, *52*: 215-237 and *Development of Modern Medicine* (New York:

On the other hand, Tenon was always eager to apply innovations, salutary rules, techniques, devices, good order, enlightened administration, superior medical care, and the practice of contracting goods and services from outside observed in hospitals like the Charité, Santé, Versailles, St. Denis and Lyon. Tenon saw a causal link between progressive practices and the low mortality of these institutions (32-60, 107). In critically comparing hospitals, in isolating and implementing emulable practices, and in appealing to an aroused public conscience, Tenon consciously modeled himself after the English prison-hospital reformer John Howard.[21] His painstaking attention to detail prompted Georges Cuvier to remark that "minute exactitude" was Tenon's second nature and that "he knew by inches and lines the air a man needed to breathe, the space he needed to sleep, to be buried . . . we never saw him appear at the funeral of our colleagues without measuring the grave to determine if it complied to regulations."[22]

Upon the heels of the natural scientist followed the imposing figure of the doctor. Having gathered specimens of varying hospital forms and having classified and differentiated their characteristics, the surgeon-anatomist could deduce from their mass a body of principles ("service, salubrity, tranquility, safety," xli) and rules founded on nature and human needs (186ff). The physical stature of man was basic. From it could be determined the proper size of a hospital bed (Tenon denounced the sharing of one bed by several patients as an outrage against religion, medicine, humanity and good

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Hafner, 1969), pp. 135-144, G Rosen, *A History of Public Health* (New York: MD Publications, 1958), pp 111-114.

[20] *Rapport des commissaires . 22 novembre 1786*, p. 102.

[21] Greenbaum, "La tournée des hôpitaux anglais par Jacques Tenon," pp 332-333.

[22] "Eloge historique de Jacques Tenon," *Recueil des éloges historiques*, vol. II (Strasbourg, 1819), pp. 294, 302.

order) which in turn determined the width of the ward. Man's oxygen requirements, derived from Lavoisier's 1785 respiration experiments,[23] determined the height of ceilings, governed the number of patients per ward and hence its size (187-188). By Tenon's calculations, the wards of the Hôtel-Dieu yielded but 1/6 to 1/8 of normal oxygen requirements (xxii). Man's water requirements for health and cleanliness (far in excess of 144 barrels available each 24 hours for the needs of 3200 patients and staff!) directly determined the planning of buildings and wards and the location of reservoirs, toilets, baths, laundries, kitchens, pharmacies, taps and sewers (147-149). The sick man's gait determined the design and construction of staircases (144). The variety of human ailment governed the location of wards within the hospitals, the placement of beds within the wards and the variability of medical-clinical facilities and services.

Upon a four-fold nosological classification Tenon conceived a scheme of specialized hospitals on the example of England (415): obstetrics, insane, fetid fevers and contagions. Surgery and convalescent wards were integrated into the first three. The primary importance of patient examination and diagnosis found architectural expression in the reception wards of Tenon's rationalized pavilion hospital. To satisfy the peculiar needs of the four groupings, specialized hospitals incorporated appropriate design features (like cells and baths for the insane, 395-397;[24] higher ceilings and hence greater air-volume for fever patients, 188), special facilities (removal of surgical operations from the wards in favor of pre-operation, operating and recovery rooms, 228), and special services (gynecology, child-delivery, post-natal, 383-384). Environmental conditions were thoughtfully regulated: the removal of all hospital services from patient areas, abundant fenestration, cleanliness, ample courtyards and promenades, decorative gardens, the elimination of smoke and odors, the placement of latrines outside wards, the isolation of the hospital morgue. In posing the question of what a hospital is, Tenon defined it as "an instrument to facilitate cure" (393). For mental patients it became a "function of the remedy" (216) itself. To the equally basic question of what constituted a bed, it was defined not as a receptacle of human misery but as a therapeutic implement which, in providing each individual warmth, relaxation of muscle tension and rest, was the essential component of healing (160).[25]

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[23] "Mémoire sur les altérations qui arrivent à l'air dans plusieurs circonstances où se trouvent les hommes réunis en société," [February 15, 1785], *Hist. Soc. Roy. Méd., 1782-1783* (Paris, 1787), pp. 569-582 Cf. *Oeuvres de Lavoisier*, vol. II (Paris, 1862), pp. 676-687.

[24] Cf. P. Carrette, "Un précurseur de Pinel: le chirurgien Tenon," *Bull. Soc. Fran. d'Hist. de la Méd.*, 1925, *19*: 376-383.

[25] In the question of establishing body heat the work of Boerhaave, Hales and de Haen was cited (*Rapport*

Joined to his ideas on hospital planning was a carefully worked out program of institutional construction and sanitary engineering formulated by Tenon and associates of the Academy of Sciences in 1780 in a government-appointed committee to reform the prisons of Paris and substantially enriched in 1787 by Tenon's detailed investigation of 52 English hospitals, prisons and workhouses.[26] This program centered on topography, site location, exposure, drainage, water supply, waste disposal, ventilation and paving. The hygienic principles which emerged from all components of this research, distilled and enumerated in the *Mémoires*, had a global public health application, Tenon held, to all institutions wherein large numbers of people were gathered such as prisons, charity workshops and factories (399, 360).

It will be remembered that Jacques Tenon devoted a lifetime to teaching surgery and to the study and popularization of anatomy.[27] It would have been surprising if the municipal hospital of a major European city were not called on to advance these interests. The Hôtel-Dieu, he maintained, was the largest hospital of Europe which treated the greatest variety of maladies, injuries, ulcers and surgical cases (326). The single surgery ward of St. Jerome performed more operations than any other hospital in the west (223). In the view, already stated in 1785, of making Paris an international center for the study of anatomy, alongside Edinburgh, Padua and Gottingen, and of training larger numbers of surgeons for the medical needs of the nation beyond the 40 turned out each year in Paris and in Montpellier,[28] the Hôtel-Dieu could be made to serve both as teaching clinic (as indeed it did after 1786 under Desault) and as research center. His model hospital of La Roquette, though never built, was the first French institution designed to accommodate this double purpose in a central, functional way (between 370-371, 376, 447-448). To improve the quality of medical practice within the hospital and to foster progress in medicine, he stressed the importance of precise and detailed case-histories which recorded symptoms, treatment, duration of disease and

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des commissaires 22 *novembre 1786*, pp 26-27)

[26] "Rapport fait à l'Académie royale des Sciences, sur les prisons, le 17 mars 1780, par MM du Hamel, de Montigny, Le Roy, Tenon, Tillet et Lavoisier," *Mém Acad Roy des Sci, 1780* (Paris, 1784), pp. 409-424, Tenon, "Journal d'observations sur les principaux hôpitaux et sur quelques prisons d'Angleterre *(BN*, NAF 22744).

[27] P Huard, "Les papiers de Jacques Tenon, 1724-1816," *Hôp. et Aide Soc. à Paris*, 1966, *7*·527-633, A Terson, "Tenon comme ophtolmologiste," *Bull Soc Fran d'Hist. de la Méd* , 1933, *27* 15-22, L S Copelman and L Froment, "Un précurseur de l'anatomie comparée Tenon," *Rev de Path Gén et de Physiol. Clin* , 1962, *62*· 861-866

[28] "Troisième mémoire sur les moyens d'éviter les maux que causent les exhumations et d'accroître les progrès de l'anatomie [1785]," *BN*, Réserve, Cf *Observations sur les obstacles qui s'opposent aux progrès de l'anatomie* (Paris, 1785), p 31.

therapeutic success (53-54, 427). These clinical procedures Tenon had initiated eight years earlier as Director of the 22-bed teaching clinic of the College of Surgery.[29]

Military medicine, which pioneered instruction in clinical methods,[30] and ordinances governing the administration of military hospitals, inspired reform recommendations in precisely those areas where the Hôtel-Dieu was wanting. Where the medical staff of that hospital were undermanned and gave patients inadequate attention at daily rounds,[31] laws of 1781 assigned a sensible ratio of medical-nursing personnel to patients in military hospitals and scrupulously regulated daily medical visits (324-327). Physicians and surgeons were to collaborate closely. Medication and food were to be carefully prescribed and measured. Patients were to be uniformly assigned single beds. Clinical cases were to be plainly designated on bedside charts by diet and treatment. Appropriate living quarters were to be assigned to medical and nursing personnel separate from patients (Tenon counted at least 287 male and female attendants at the Hôtel-Dieu who, lacking dormitories, sequestered the single beds of patients, 314-315, 345). Convalescents were to be accorded appropriate care and clothing and promptly discharged (325-328), in marked contrast to the 833 convalescents of the Hôtel-Dieu who, without wards of their own, found space wherever they could in other departments, including the beds of patients with contagious diseases. Out of bed most were inadequately clothed against the cold of the poorly-heated hospital (285-288). Many were kept on beyond recovery by the religious nurses who, in return for bed and board within the wards themselves, employed them in laundering and cleaning.

Tenon was bold, along with the rest of the scientific community, in unequivocally condemning the old Hôtel-Dieu. Far from being an institution to cure disease it spread it, lavishing its cornucopia of morbidity and death on newly entering Parisians who justly reviled it (198, 284). Bereft of hygienic and medical safeguards, epidemics of scabies, typhus and puerperal fever raged within the hospital (196). The evacuation of its filth and corpses spread smallpox and other dread maladies to the population outside (200). Its mortality, unlike that of any other hospital known (278, 345), was directly due to conditions which prevailed inside and defeated the whole purpose of healing (227).

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[29] See his letter of June 13, 1780 to La Martinière, First Surgeon of Louis XVI, describing records of medication and food (*Archives de la Faculté de Médecine*, 2275)

[30] Cf. M Foucault, *Naissance de la clinique Une archéologie du regard médical* (Paris Presses Universitaries, 1963), pp. 28-31

[31] Turgot's memorable description of patient care in hospital wards is part of his *Encyclopédie* article "Fondation," vol VII (Paris, 1757), p 73

The author of the *Mémoires* was less frontal in criticizing those two things which troubled contemporary reformers most in the actual management of the Hôtel-Dieu and without whose amelioration innovative change was out of the question: the hospital administration and the Augustine nurses. Below the seven dignitaries of church and state legally charged with the responsibility of the hospital but not actively engaged in its daily operation, were a dozen functioning administrators. Appointed for life and drawn from the sovereign courts and the magistracy, they enjoyed unheard-of autonomy in administering the hospital together with its huge wealth. A kind of state within the state,[32] they were immune from accountability either to king or public whose will to reform the hospital they managed skillfully to defy. Despite repeated clamor for public disclosure, hospital records of patients and finances were kept secret, dooming all efforts at responsible improvement. The administration was decried for secretiveness, wastefulness, peculation and unbending resistance to reform.[33]

The ninety Augustine sisters were in their own sphere equally powerful. Courageous, hard-working and sincerely devoted to the welfare of the sick (viii, 132, 323),[34] they claimed sovereignty over the domain of patient care out of the conviction that the hospital was a refuge of the poor, a house of Christian charity in which servants of God, whose presence was hallowed centuries before the entry of a medical service, dispensed spiritual comfort with whatever physical relief was possible. They jealously guarded their prerogatives in the feeding, distribution of medication and discharge of their deserving poor, often in defiance of the directives of physicians and surgeons.[35] With increasing difficulty they suffered the presence in the hospital of surgery apprentices who flocked by the hundreds to Desault's surgical lessons. They were nervously apprehensive that their privileged status was being challenged by an increasingly able and aggressive medical staff whose view of the hospital they unalterably opposed, and whose ascendancy they would fight tooth and nail right up to the Revolution.[36]

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[32] J Imbert, *Les hôpitaux en France* (Paris: Presses Universitaires, 1958), p. 31.

[33] C-H. Piarron de Chamousset, "Exposition d'un plan proposé pour les malades de l'Hôtel-Dieu" [1756], *Oeuvres*, vol. I (Paris, 1783), pp 135-152; [Regnier] *Projet d'un Hôpital de Malades ou Hôtel-Dieu* (London-Paris, 1776), pp. 12-14; [Abbé de Malvaux] *Résumé des mémoires qui ont concouru pour le prix accordé en l'année 1777 par l'Académie . . . de Chaalons-sur Marne et dont le sujet étoit les moyens de détruire la mendicité en France. . .*" (Châlons, 1779) pp. 75-94; Abbé de Recalde, *Traité sur les abus qui subsistent dans les hôpitaux du royaume et les moyens propres à les reformer* (Paris, 1786), pp. 4-21, Rondonneau de La Motte, *Essai historique sur l'Hôtel-Dieu de Paris* (Paris 1787), pp. 131-225

[34] *Extrait des registres de l'Académie royale des Sciences du 12 mars 1788 Troisième rapport des commissaires chargés, par l'Académie, des projets relatifs à l'établissement des quatre hôpitaux* (Paris, 1788), pp 13-14, Cf. L. S. Greenbaum, "Hospitals, scientists and clergy in eighteenth-century France: An unpublished letter of Gaspard Monge to Jacques Tenon on the Hôtel-Dieu of Beaune (1786)," *Episteme*, in press

[35] R Mandrou, "Un problème de diététique à l'Hôtel-Dieu de Paris à la veille de la Révolution," *Actes du 93e Congrès National des Sociétés Savantes. Section d'histoire moderne et contemporaine.* vol. I (Paris: Imprimerie Nationale, 1971), pp 125-137

Like Pierre Bayle in the *Historical and Critical Dictionary* and Denis Diderot in the *Encyclopédie*, Tenon launched some of his boldest thoughts in the footnotes of his book. Against entrenched power his only weapon was reason. Against administrative abuse, he cited French law which required hospital administration to publish annual financial accounts (300). In Lyon[37] and England administrators were popularly elected, were efficient and responsible, and posted bond to affirm their probity (316-322). Against the prerogatives of the nuns and priests he maintained that physicians and surgeons must have the final authority to admit, care, prescribe treatment and discharge patients. The situation currently prevailing at the hospital, he confessed, was as bad as it had been 600 years earlier when surgery was in its infancy (327). In Lyon and in military hospitals nurses were forbidden to distribute food without authorization. He advocated introducing lay nurses into the Hôtel-Dieu recruited from orphan girls of the Salpêtrière (330).

As to the ultimate direction and financing of the hospital, Tenon repudiated corporate control in favor of the state (113), consonant with the aspirations of chief-ministers Turgot and Necker to convert the hospital patrimony into a national hospital budget, and along with the hospitals themselves, publicly administered.[38] Hospital care was not a function of confessional charity but fell within the purview of public assistance. It was the nation which sent its sick to the hospitals (146).

Every line of Tenon's *Mémoires* resonates with the faith of the Enlightenment, confident that open minds of citizens and kings alike, guided by science and reason, would overcome prejudice and obstacles and institute a modern, efficient Hôtel-Dieu:

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[36] [Regnier] *Mémoire sur la nécessité de construire hors de la ville un Hôtel-Dieu commode et spacieux par l'auteur d'un projet d'Hôpital des Malades* (London-Paris, 1776), p 9, Recalde, *Traité des abus*, pp. 24-25; Rondonneau de La Motte, *Essai historique*, pp. 210-211; "Extrait d'un mémoire présenté par les médecins de l'Hôtel-Dieu à l'administration de cet hôpital [1756]," in *Notes sur l'ancien Hôtel-Dieu de Paris relatives à la lutte des administrateurs laiques contre le pouvour spirituel*, A. Rousselet, ed. (Paris, 1888), pp. 161-164; *Documents pour servir à l'histoire de l'Hôtel-Dieu de Paris et des hôpitaux qui en dependaient. Délibérations de l'ancien bureau de l'Hôtel-Dieu*, C. Brièle, ed., vol. II (Paris, 1883), pp. 215-219; Dulaurens, *Essai sur les établissemens nécessaires et les moins dispendieux pour rendre le service des malades dans les hôpitaux vraiment utile à l'humanité* (Paris, 1787), pp. 34, 50-51. Cf. Fosseyeux, *L'Hôtel-Dieu de Paris*, pp. 36-37; L. MacAuliffe, *La Révolution et les hôpitaux de Paris* (Paris: Société Nouvelle de Librairie, 1901), pp. 77-87, T. Gelfand, "A confrontation over clinical instruction at the Hôtel-Dieu during the French Revolution," *J. Hist. Med. & All. Sci.*, 1973, *28*: 268-282. For a somewhat different view, cf. D. B. Weiner, "The French Revolution, Napoleon and the nursing profession," *Bull. Hist Med.*, 1972, *46*: 277-283.

[37] A. Bouchet, "Parallèle entre l'Hôtel-Dieu de Paris et celui de Lyons vers 1750," *Cahiers Lyonnais d'Histoire*, 1966, *10*: 3-28.

[38] M. Rochaix, *Essai sur l'évolution des questions hospitalières de la fin de l'ancien régime à nos jours* (Paris: Fédération Hospitalière de France, 1959), pp. 39-47, 52-55; C. Bloch, *L'assistance et l'Etat en France à la veille de la Révolution* (Paris: Picard, 1908), pp. 189-190, 232.

> Reason brought to perfection has rendered modern governments more attentive to the pressing needs of the sick and destitute. It has instructed the philosopher in the incontestable rights of humanity. It has enlightened the legislator on the real interests of society. It has taught them, and all men, that there is no living being more worthy in the eyes of nations than the pregnant woman who carries in her womb the hope of families, the support of empires and the germ of future generations (231).

With Physiocrats and populationists he decried the fatal "depopulation" of Paris by its principal sick hospital which devoured one out of every 15 delivering mothers ("It is truly alarming to observe that in no place in Europe, in no city, in no village, in no hospital is anything comparable to the loss of delivering mothers at the Hôtel-Dieu of Paris," 269), one out of every 13 newborn children and one out of every 3 infant children delivered to it (xxxiii, 260). It sacrificed nearly 2000 lives each year because its death rate criminally exceeded the mortality rates of other Paris hospitals.[39] It was Tenon who attracted royal favor to the midwifery school of the Hôtel-Dieu,[40] the only one of its kind in the kingdom. He was one of the first planners to speak of the rehabilitative social function of the hospital, where workshops instituted for the benefit of convalescing patients, would assure them work while seeking outside employment and a secure return to society (298-299).

Locating the hospital within the cosmopolitan, humanist culture of the eighteenth century, Tenon referred to it as "a measure of the civilization of a people" (1), an institution shaped by the climate, natural wealth, religion, laws and customs of a country (421-424). These notions of physical and cultural environmentalism crystallized during Tenon's stay in England, a country which influenced his thinking as dramatically as it had Voltaire's and Montesquieu's. Climate directly dictated the size of hospital wards and windows. In the heat of Italy wards were large and ceilings high. In cold and humid England, whose rainfall was 47-48 inches as compared to 18-20 in France, wards were smaller and ceilings lower and hospitals were built on elevated foundations surrounded by drain ditches and sewers. The use of a nation's natural produce, for example beer and coal in England as opposed to wine and wood in France, raised not only questions of the relative merits of those commodities to health but implied for the hospital a whole different set of design options and a more economic use of space without enormous wine and wood cellars. The lack of wood ash for lye in England meant the elimination within the English hospital of large, expensive, potentially dangerous laundries in favor of outside suppliers. As for religion, in Protestant England one clergyman sufficed for an entire hospital of up to 1200 to 2000 patients. There was no need of large chapels, altars in each ward, or cloisters of priests and nuns. Wetnurses and male nurses were not subject to religious vows. Of enormous importance to hospital planning were vital statistics (255). Protestant countries like Germany, Sweden and England were far in advance of France in publishing them for the entire population. (In France Protestants did not legally exist between 1685 and 1787 and Jews only after the Revolution). In the matter of laws, English parliamentary democracy entered the hospitals through the windows! The double-hung sash of British hospitals were the same windows used in the modest homes of English freeholders, whose payment of taxes, including that on windows, determined their right to vote, and hence was the keystone of their political liberty. In France perpetual endowment of hospitals and permanent income derived from it meant a steady, predictable operation and massive construction. In England, variable annual gifts and public subscriptions to the voluntary hospital rendered their existence precarious and their fabric less enduring.[41]

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[39] *Extrait des registres de l'Académie royale des Sciences du 22 novembre 1786*, p 80; *Mémoires sur les hôpitaux de Paris*, p. 278.

[40] *Archives Nationales de France* (Paris), O^{1}* 498, fol 39, Cf P. Delaunay, *La Maternité de Paris, 1625-1907* (Paris. Rousset, 1909), pp 254-255.

Usages of foreign hospitals, however instructive, like everything else, had to be evaluated critically against the real needs of a country. It was out of blind imitation, Tenon asserted, that the monumental Baroque hospital edifices of France, unsuited to northern climate, had been slavishly copied from Italy where they should have remained (190, 424)![42] From the experience of a happy and productive sojourn in England he viewed the hospital as a cumulative, collaborative, supranational effort of scientists, learned societies, governments, even peoples united by common aspirations of humanity and peace (xlix-1).

The title which Tenon settled on his book reveals the author's modest but untiring ambition to advance science: "neither a treatise or even an essay on the hospitals," he wrote, "but only memoirs . . . a notebook of observations, reflections and doubts. . . ." (lvi, 410). The perfection of the hospital, he asserted confidently, would continue to attract the efforts of men in the future who would correct his views and contribute new and better knowledge (lvi, 301).

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[41] These differences and others were elaborately developed in two manuscripts, "Notice sur les hôpitaux anglois," *(BN,* NAF 22744, fols 136-137) and "Différences des Hôpitaux françois et anglois," *(BN,* NAF 22743, fols. 68-69).

[42] Cf Baron de Gérando, *De la bienfaisance publique*, vol IV (Paris, 1839), p 297

Tenon was altogether correct in envisioning the hospital as a health institution, the place where a constantly improving medical science and technology would be implemented by competent practitioners and researchers and by journeymen placed under their guidance. He was equally right in realizing that the hospital was the conscience of a civilization whose worth, in the end, would be measured not by articles of faith and lofty doctrine but by the way it nurtured life, succored distress, righted injustice and transformed misery, frailty and want into hope, dignity and sufficiency.[43]

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[43] *BN*, NAF 22747, fols. 55-56

AN EARLY DISCUSSION OF MEDICINAL DEGREES AT MONTPELLIER BY HENRY OF WINCHESTER*

MICHAEL McVAUGH

The early thirteenth century was for the University of Montpellier, as it was for the universities of Paris and Oxford, the time in which the school established itself as a center of learning. In these years Montpellier started to assimilate the new translations of Aristotelian and Arabic medical works, and in the process began to replace Salerno as the center of medieval medical education. But very little is yet known about the details of institutional and intellectual development of the school in this period.[1] Its chartulary begins to give a satisfactory picture of its organization only after the middle of the century, and its literary productivity first becomes significant in the 1280s and 1290s, with the writings of Bernard of Gordon and Arnald of Villanova. Thereafter there is a wealth of material from which we can reconstruct the increasing scholasticization of medicine at Montpellier; before this there is almost unbroken silence. We have so far been able to identify with certainty only a very few of Montpellier's masters before 1280, and these few have left us virtually no records of their thought.

An important exception to this generalization is Henry of Winchester (Henricus de Guintonia), named as *chancellarius* of the medical faculty in a charter of 1239/40.[2] Henry has not so far been the subject of any medico-historical study, for it has been difficult to identify any writings as certainly his. Two or three late twelfth- or early thirteenth-century works are known in attribution to a "master Henry" or even a "Henry of Winchester,"[3] but it has not been possible to identify their author with the Montpellier chancellor. But C. H. Talbot has recently called attention to a commentary on Johannitius' *Isagoge* that exists in an early thirteenth-century manuscript and that was originally ascribed to "Magistri Henrici de Wynton,"[4] and both he and Neil

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* Much of the research on which this paper is based was made possible by a Wellcome Travel Grant. I wish to thank Dr. Charles H. Talbot and Dr. Richard W. Hunt for their many valuable comments and suggestions.

[1] For a summary, see Vern L. Bullough, *The Development of Medicine as a Profession* (Basel and New York: S. Karger, 1966), pp. 52-60.

[2] Alexandre Germain, ed., *Cartulaire de l'université de Montpellier* 2 vols. (Montpellier: Richard Frères, 1890-1912), vol. I, p 186.

[3] C. H. Talbot and E. A. Hammond, *The Medical Practitioners in Medieval England* (London: Wellcome Historical Medical Library, 1965), p. 87, cite most of the works attributed to "Henry of Winchester."

[4] MS Oxford, New College 171, fols. 1-18vA

Ker have pointed out that fragments of a later manuscript of the same commentary are to be found ascribed to "Magistri henrici montis pessol" scattered among the paste-downs of two Oxford colleges.[5] The latter manuscript proves to be somewhat inferior textually, and only about half of its version of Henry's commentary has been preserved; but it does contain much material omitted in the earlier copy.[6] There seems no reason to doubt that this commentary is in fact an early work of the chancellor of 1239/40, and this now makes it possible to discuss knowledgeably the first stages in Montpellier's intellectual development. As one example, I mean here to show what Henry's pharmacological ideas suggest about medical thought at the school early in the century.

The work that inspired Henry's commentary, the *Isagoge* of Johannitius (Hunain ibn Isḥāq, d. 877), was one of the constituents of the *Ars medicine* or *Articella*, a collection of Latin translations of Greek and Arabic medical writings that also included Hippocrates' *Aphorisms*, Galen's *Tegni*, the *Urines* of Theophilus and *Pulses* of Philaretus, and a few other works similarly broad in scope. This collection (much of which had been translated by Constantine the African) had been in existence since the beginning of the twelfth century, and provided a core of material for medical education throughout the Middle Ages.[7] For more specialized information medieval medical schools depended increasingly upon Galen and Avicenna, after their works (which had been translated by Gerard of Cremona before 1187) came into use midway in the thirteenth century, but the *Articella* remained necessary to a physician's training. It was an integral part of the Montpellier curriculum, for example, as late as 1340.[8] Thus the fact that Henry commented on a work from the *Articella* is less of an indication of the commentary's date than is the fact that in that commentary he makes no reference to any of the Gerardian translations. Henry's sources are exclusively the scientific and literary authorities of the twelfth century: the *Articella*, Ovid, Seneca, Augustine, Ambrose, Rémy d'Auxerre. Hence we are probably fairly safe in viewing Henry's commentary on Johannitius as a product of the first quarter of the century — written presumably near the beginning of his professional career, since as we have seen this extended to at least 1240.

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[5] Neil R Ker, *Pastedowns in Oxford Bindings* (Oxford Bibliographical Society, *Publications*, n. s., V [1951-1952], nos 1338, 1302, C H. Talbot, *Medicine in Medieval England* (London. Oldbourne, 1967), pp 61-62

[6] I have carefully collated the two manuscripts, and can summarize my findings as follows:

MS Oxford, Corpus Christi College 490, nos. 90-91, and MS Oxford, New College 364, nos. 121-126, are leaves from a late thirteenth-century manuscript containing Henry of Winchester's commentary on Johannitius (also found in MS Oxford, New College 171, fols 1-18v). A tentative reconstruction of the original from which these fragments derive suggests that the leaves were originally parts of three quires of six leaves each. Of quire I, we have the three central leaves: MS New College 364, no 121, was its 4th and 9th folios, MS Corpus Christi 490, no 91, its 5th and 8th folios; MS Corpus Christi 490, no. 90, its 6th and 7th folios According to this numeration, Henry's commentary begins on quire I, fol 6rA, so that there remain to us in this quire the first four folios of the text; they correspond to fols 1-4rA in MS New College 171 Of quire II, we have four leaves: MS New College 364, nos 122-125, which were respectively fols. 1/12, 2/11, 5/8, 6/7 of that quire. This material corresponds to fols. 6rA-7rB, 8vA-11vA, 13rA-14rA of MS New College 171 Of quire III, we have only a single leaf· MS New College 364, no 126, which was originally the quire's central leaf (fols 6/7), and which contains the explicit of the work ([Expli]cit summa magistri Henrici montis pessol) on what would have been fol. 7vA of the quire It corresponds to MS New College 171, fols. 17vA-18vA, but adds a final column of text not found in that manuscript.

A third copy of the same work (untitled), which I have also studied, is found in MS Basel, Univ. D. III. 20, fols. 122r-137v. Here too the text is incomplete, it includes only the first three-fourths of the material provided in the New College manuscript.

[7] Paul Oskar Kristeller, "The School of Salerno Its Development and its Contribution to the History of Learning," *Studies in Renaissance Thought and Letters* (Rome; Edizioni di Storia e Letteratura, 1956), pp. 495-551, the origins and influence of the *Articella* are touched on at pp 509-510.

The *Isagoge* is not a difficult book. It was composed as an introduction to the concepts and doctrines of Galen's *Tegni*, itself a general survey of medical theory. Consequently, commentaries on the *Isagoge* do not as a rule contain startling novelties. Their authors usually developed diligently Johannitius' enumeration of the *res naturales* (things whose presence is absolutely essential to the existence of the body), *res non naturales* (things whose proper administration is essential to the well-being of the body), and *res contra naturam* (things which are antipathetic to the body), describing and explaining the nature of each member of each group of *res* in patient detail. The *res naturales*, for example, consist of the elements, the complexions, the humors, the members, the forces *(virtutes),* the operations and the spirits — and perhaps (depending on one's school of thought) age, color, bearing, and sex as well.

Henry of Winchester's commentary is somewhat unusual in repeatedly enlarging upon this format. Before taking up the elements among the *res naturales*, for example, he discusses the entity *hyle*, or prime matter.[9] This, Henry explains, is "substance lacking quality, form, quantity, space, and time," created *ex nullo* by God. It is the corporeal stuff out of which the four terrestrial elements and the celestial quintessence are produced; as such, of course, it is an obvious precursor of the *res naturales*. But it is not an entity to which Johannitius refers at all, and is not one with which commentaries later in date were to be much concerned. Henry's particular interest in it is undoubtedly due to his awareness of the twelfth-century intellectual tradition that had produced a fairly precise formulation for this term by synthesizing all its available scraps of natural philosophy.[10]

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[8] See the reading list summarized by Sonoma Cooper on p 174 of her article, "The Medical School of Montpellier in the Fourteenth Century," *Annals of Medical History*, n s 1930, 2 164-195

[9] MS Oxford, New College 171, fol 1vA-vB, *de yle*.

In the same way, after discussing the *elementa* and *complexiones*, Henry introduces another non-Johannitian subject, medicinal degrees, in a section entitled *De gradibus*.[11] This is again a concept defined by twelfth-century writers. The notion that the strength of the "complexion" or qualitative nature of a body can be measured on a scale of four degrees plus a point of balance or temperancy goes back at least to Galen, who applied the idea to drugs in particular; however, no Greek or Arabic writer who was accessible in translation at the moment when medieval physicians began in the twelfth century to inquire into the theoretical foundations of their art had given any sort of careful description of degrees, of their determination or their properties. Hence a number of original twelfth-century medical works were inspired by an attempt to draw together in synthesis what fragmentary remarks *de gradibus* Latin readers could find (principally in the *Articella*); these ranged in date from Constantine the African's *Liber graduum* of the late eleventh century to an untitled essay by Urso of Calabria of ca. 1200.[12] Henry's discussion may thus be understood as one of the last of these early attempts at an original synthesis of basic pharmacological theory, made before the views of Galen himself and of Arabic theoreticians like Avicenna, Alkindi, and Averroës became available. Its importance to him, however, was much more than merely pharmacological. Henry makes unusually extensive use of a theory of complexions throughout his commentary in order to explain the nature of particular diseases and cures, and this section *de gradibus* is in a sense an exposition of the foundations for his system of medicine.

Henry's ideas hold still more interest in that they are associated with the medical tradition at Montpellier. For it was at Montpellier that, after Galen and the Arabic writers had been received and assimilated, a new treatment of medicinal degrees was developed that made possible the creation of a mathematical theory of compound medicines, of pharmacy. This was the achievement of Arnald of Villanova in the 1290s, and was the subject of much eager debate at the school during the following century as the Montpellier masters pursued their scholasticization of medicine.[13] Henry's text thus allows us now for the first time to be clear about the contents of the theory *de gradibus* that preceded Arnald's at Montpellier. In fact, as I have already suggested, his commentary holds few real surprises in this area. It is simply an admirable résumé of most of the questions and conclusions laboriously developed by European medicine during the preceding 150 years, and there is no guarantee that any of the material is original with Henry.[14] But because it is in a sense the culmination of one intellectual tradition and the background for the foundation of another, it is of interest to examine its main features.

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[10] See, for example, Richard Lemay, *Abu Ma'shar and Latin Aristotelianism in the Twelfth Century* (Beirut: American University, 1962).

[11] MS Oxford, New College 171, fols. 3vB-4vA. The text of this section is given below, and my references to Henry's ideas will be identified by line numbers in that text.

[12] Constantine's *Liber graduum* is included among his works in their various sixteenth-century editions. It is found (under this title) in the *Opera Constantini* of Basle, 1536, at pp 342-387; a better text is printed as *Tractatus Constantini de gradibus medicinarum* in the *Opera Ysaac* (Lyons, 1515), (II) fols. 78rA-86rA. In this latter book the *Liber graduum* has been inserted into Constantine's *Pantegni*, between the second and third books of the *practica*. Urso's untitled pharmacological essay has been edited by Karl Sudhoff in "Die Salernitaner Handschrift in Breslau," *Archiv fur Geschichte der Medizin*, 1920, *12*: 135-138, on Urso's significance for Salernitan medicine, see Kristeller, "The School of Salerno," pp. 517-19. Chronologically somewhere between these two texts should be placed the short anonymous work "Apud antiquos," edited and discussed by Michael McVaugh, "'Apud antiquos' and mediaeval pharmacology," *Medizinhistorisches Journal*, 1966, *1*, 16-23.

Medieval medical writers from Constantine the African on accepted as a starting point the classical assumption that natural objects generally, and medicines in particular, possess a characteristic complexion, a blend of the four primary qualities (hot, cold, dry, and moist) that proceeds from the elements out of which the natural world is made. They agreed, too, that the strength of these qualities in the medicine can be differentiated with respect to the effect that the domination of one quality by its opposite produces upon the human senses: in a phrase that with minor variants was widely repeated all through the Middle Ages, "Gradus est excessus qualitatis ab optima temperantia sensu determinabilis."[15] Finally, there was widespread acceptance of a set of criteria characterizing the four degrees as stages in sense perception, the first degree "dominated" by the perceiving sense, the second equal to sense, the third altering it, and the fourth damaging it.[16]

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[13] Michael R McVaugh, "Quantified Medical Theory and Practice at Fourteenth-Century Montpellier," *Bulletin of the History of Medicine*, 1969, *43*: 397-413.

[14] Dr. Charles Talbot has pointed out to me the similarity — occasionally very close — between Henry's remarks, discussed here, and those of Gilbertus Anglicus in his *Compendium medicine* (Lyons, 1510; fols 162v-163v), some passages are actually identical in the two works. The *Compendium* is perhaps the later of the two — Gilbertus displays a knowledge of Avicenna and of the Aristotelian natural-philosophical writings, which Henry does not — but there is no reason to think that its discussion was copied from Henry's, and it is perfectly possible that both derive from a still unidentified common source.

[15] The phrase can be found in "Apud antiquos" (ed. McVaugh) at line 44; in Urso's essay (ed. Sudhoff) at lines 34-35; in Henry's (edited below) at lines 18-19. While Constantine's *Liber graduum* apparently does not contain this precise phrase, the concept of qualitative excess or domination is obvious in its definition of the individual degrees. See below, n. 16.

[16] "Calidum in primo gradu minus est calidum naturali calore. In secundo calidum est quasi ille calor. In tertio gradu maior illo calore. In quarto ultra eum est. . . Quod si aliquod sensualiter tentare volumus gustare oportet, cui si sensus dominetur in primo gradu est. Si cum sensu est equale, ut unus alteri non dominetur, est in secundo. Si autem sensus per eum mutetur, suam tamen sustinens tolerantiam, dicitur esse in tertio. Rursus si

At this point medieval writers began to diverge in their treatment of degrees, inquiring into a number of weak or hazy areas within this common theoretical framework. One such area involved the problem of defining the point of temperancy, of qualitative neutrality. Difficulties arose in trying to reconcile an intuitive conception of the scale on which the degrees lie, according to which temperancy should lie equidistant between the first degree hot and the first degree cold, with a statement made by Isaac Israeli (Isḥāq al-Isrāʾīlī, d.ca. 932) in his *Dietis universalibus* that the human *equa complexio* is hot and moist in the second degree.[17] Constantine, the first of the Western theoreticians, addressed himself to this issue, but his attempt at harmonizing the two views only resulted in more confusion when he concluded that "what is hot in the first degree is hotter than the temperate; but it is less hot than the hotness of that temperancy."[18] The anonymous author of the twelfth-century work beginning "Apud antiquos" made the situation only slightly clearer with his attempt to define two scales of qualitative measurement, one measuring absolute qualitative *dominium*, on which the temperate is the midpoint between hot and cold, and one measuring variation in the human complexion from the healthy ideal, hot and moist in the second degree.[19] Though this author certainly understood Isaac's intentions correctly, his exposition is still not entirely satisfactory.[20]

Another problem that received investigation in the twelfth century was that of justifying a limit of four degrees upon the range of qualitative *dominii*. Under one point of view it can be maintained that twelve divisions can be recognized there just as well as four, since each degree can be subdivided into beginning, middle and end.[21] Under another point of view it can at least be

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sensus per eam mutetur, ut nullatenus eius acumen pati valeat, constat esse in quarto gradu " Constantine, *Liber graduum*, *Opera Ysaac*, (II) fol. 78rB Cf. "Apud antiquos," lines 56-67; Urso, lines 88-99; Henry, lines 34-45.

[17] "Humana autem complexio temperate est calida et humida in secundo gradu." Isaac [Israeli], *Liber dietarum universalium*, lectio xvii; *Opera Ysaac*, (I) fol. 43rB.

[18] ". . .Quod in primo gradu calidum est equali complexione calidius est, minus tamen calidum est calore illius eque complexionis, unde nec calefacit eum nec augmentat." Constantine, *Liber graduum*, *Opera Ysaac*, (II) fol 78rB. Constantine wrestled with this same problem in the *Pantegni*, liber I theorice, cap vii, *Opera Ysaac*, (II) fol 2rB-vA

[19] McVaugh, "Apud antiquos," pp. 16-18.

[20] Early in the *Dietis universalibus*, long before he characterized the human complexion as hot and moist in the second degree (above, n. 14), Isaac had set out just such a distinction between absolute and relative scales of qualitative measurement: Isaac, *Liber dietarum universalium*, lectio II; *Opera Ysaac*, (I), fol. 14vA What seems to be an awkward expression of the same doctrine can be found in another constituent of the *Articella* Galen's *Tegni*, liber I, tract. iii, lectio [2] (*Articella* [Venice, 1483], fol. 153vB).

[21] "In his [gradibus] quoque non invenientes nisi occultas et incomprehensibiles divisiones, neque nomen eis imponere valentes unicuique gradui tres attribuunt partes, initium, medium, et finem." Isaac, *Liber*

asked, as Urso of Calabria did, whether the scale of stages of sense perception is actually contained within the four traditional degrees, or whether there might not be a still hotter or colder substance than one of the fourth degree; Urso responded with a demonstration that a *dominium* greater than that of the fourth degree would require the complete destruction of the percipient sense, and consequently could not be measured in terms of degrees at all.[22] None of these discussions, therefore, ultimately accomplished more than to refine and make precise the stages in the traditional four-degree scale.

Henry of Winchester's understanding of the theory *de gradibus* can immediately be recognized as belonging to this same early Western tradition built upon the *Articella*. He shares the general intellectual framework of propositions and problems that I have sketched out above, and indeed gives it perhaps its clearest written expression. He defines both the individual degrees and "degree" in general in the twelfth-century manner;[23] he accepts the subdivision of each degree into three *partes*, taking the *Tegni* for his authority (although he draws the peculiar conclusion that there will consequently be a total of 4 *gradus* + (4 × 3) *partes* or 16 divisions in the full scale, not twelve);[24] and he presents a cogent resolution of Constantine's initial difficulty, of how the first degree can be spoken of in different ways as either hotter or less hot than the *equa complexio*.[25] Perhaps the best illustration of Henry's clear-headedness is provided by his acceptance of the relativity of hotness and coldness, and his examination of the consequences of this principle. To someone educated in the Galenic tradition, it was not easy to cut free from the belief that hot and cold were absolute entities that might well coexist — for example, in the temperate state — but evidently Henry managed to do so. He argues that hot and cold cannot actually coexist independent of one another: that a body heated four degrees above temperancy must at the same time become less cold by four degrees. We call the resultant quality hot because we perceive the increased heat with our senses, while we can speak only

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dietarum universalium, lectio xv, *Opera Ysaac*, (I) fol 39rB Cf. Constantine, *Liber graduum*, *Opera Ysaac*, (II) fol. 85rA; "Apud antiquos," lines 76-93. Urso does not explore the idea

[22] Urso, lines 99-103. Constantine expresses much the same idea· "Et quoniam sensualiter nequit comprehendi in quo res destructiva valeat, posuerunt antiqui in fine quartum gradum, quia post destructionem rei nullam formam invenit ratio quam possint comprehendere medici." *Liber graduum*, *Opera Ysaac*, (II) fol 85rB See also "Apud antiquos," lines 67-75.

[23] Above, notes 14, 15; though lines 27-30 indicate that he was moving towards a somewhat different definition

[24] Implicit in lines 154-156 and 20-24; though cf. fol 17rB in the same manuscript, where Henry in explaining what Galen meant by "x numeri" argues "Numeros ibi vocat principales partes graduum, iii igitur numeri faciunt unum gradum; x^9 ergo numerus est principium quarti gradus."

[25] Lines 167-181.

abstractly, intellectually, of its coldness.[26] Henry's presentation is somewhat condensed, but it is still a much more understanding expression of qualitative relativity than any of his contemporaries possessed. In all these respects, then, Henry displays a clarity, if no novelty, of thought.

In other areas, however, Henry is raising new issues, and it is particularly interesting to see that a number of these foreshadow the new orientation that pharmacological theory would adopt at Montpellier towards the end of the century. He begins his section *de gradibus* with a definition of degree that he claims to be that of Jacob Alkindi (Ya'qūb ibn Isḥāq al-Kindī, d. ca. 873): "Gradus est sedecupla proportio vel aliqua submultiplicium partium eius que continua proportionalitate distinguitur." This is not the place to expound the Alkindian theory of pharmacy, essentially a mathematical one, that became one of the principal elements in Arnald of Villanova's *Aphorismi de gradibus*.[27] It may briefly be characterized as having supposed that a medicine's qualitative effect was mathematically determined by the ratio between hot parts and cold parts within the drug, and that this effect increased arithmetically as the ratio doubled: temperancy followed from a 1:1 ratio, the first degree from one of 2:1, the second degree from 4:1, . . . and the fourth degree from 16:1. On this basis Alkindi proposed a method of determining the degree of any mixture of simple medicines, whatever the degrees and weights of the ingredients involved might be. All this is far removed from the limited aims of the twelfth century, and nothing of the complexity and sophistication of the theory is apparent in Henry's one-line definition. It seems clear that in fact Henry had no real understanding of Alkindi's work on degrees (translated into Latin from Arabic by Gerard of Cremona in the twelfth century), no sense of the novelty of its aims and assumptions. He would not have found it easy to maintain its axiom that hot and cold coexist in every drug with his own doctrine of qualitative relativity; the difficulty of reconciling the two positions was to seriously vex Montpellier physicians at the century's end.[28] Indeed, Henry may have had no direct acquaintance with Alkindi's theory at all. The single sentence that he claims to have taken from Alkindi cannot be found in Gerard's translation; later in the thirteenth century this sentence turns up repeatedly as a stock summary of Alkindi's theory for many other men who are apparently ignorant of the book it purports to represent,[29] and it will probably prove to be a brief allusion to Alkindian doctrine imbedded in some other translation circulating in the twelfth century, perhaps a constituent of the *Articella*. Hence Henry's reference to Alkindi has no real historical significance; but it is still of interest as an anticipation of ideas to come.

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[26] Lines 75-100. The same interpretation is revealed at a later point in Henry's commentary. "Ponatur enim quod aliquis moriatur de febre solo. Cum iam morti vicinetur, calor qui est forte in tercio remittitur. Frigiditas que est citra temperantiam intenditur tantum caliditas remittitur et econverso, et equaliter distant iste due qualitates a temperatia; et quantum una remittitur descendendo, tantum reliqua intenditur ascendendo." The conclusion that he draws — "ergo iste due sibi obviabunt in temperantia, ergo hoc corpus erit temperatum quando in paroximo morietur . . . ." — seems inconsistent with his earlier position. MS Oxford, New College 171, fol 12vB

[27] I have a study in preparation of the *Aphorismi de gradibus* and its principal sources, Alkindi and Averroés. For a general survey of the issues involved, see Edith Sylla, "Medieval quantifications of qualities: the 'Merton School,'" *Archive for the History of the Exact Sciences*, 1971, *8*:9-39, esp. pp. 16-20.

[28] McVaugh, "Quantification," pp. 405-406.

One other important feature of this commentary is Henry's hesitant use of a new philosophical terminology just beginning to gain strength in scholastic thought. He uses the new word *intensio*, for example, to describe qualitative strength, roughly our "intensity," although he contrasts it with the term *occupatio subiectorum* rather than with *extensio*.[30] In this respect he shows a better command of the terminology than does his near contemporary Urso, who employs the word much less confidently when he explains that "a temperate complexion is said to be intermediate, between intension and remission."[31] More importantly, Henry introduces and explores the meaning of the term *latitudo*. In the second half of the thirteenth century, as natural philosophers began to understand what qualitative intensification involved, this word gained general currency as denominating a range of continuous qualitative intensity. It has already been suggested that this terminology might have been drawn from medical literature, on the grounds that such a usage can be found in translations made in the twelfth century (notably the *De regimine sanitatis* translated by Burgundio of Pisa).[32] One other possible source of great interest is Gerard of Cremona's version of Haly Rodohan's commentary on Galen's *Tegni*. Gerard employed *latitudo* to denote the range of human healthfulness, and in one passage even explained that it could undergo intension and remission.[33] Yet Henry, who shows no knowledge of these twelfth-century materials and is apparently writing before they came into wide circulation, is using the term in essentially its late thirteenth-century sense, as a range of qualitative intensity.

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[29] Peter of Spain, writing at mid-century, is an example: "Secundo queritur de illa diffinitione quam ponit iacobus alkindi in lib. graduum que talis est: gradus est sexdecupla etc. vel aliarum rerum subnumeratarum continue proportionatarum et sequentium proportionem, quia in primo gradu fit additio binarii ad unitatem, in secundo gradu est dupla proportio, ut additio binarii ad binarium, et ita fit processus usque ad sexdecim " *Commentarium Petri hispani super librum dietarum universalium Isaac, Opera Ysaac*, (I) fol. 40r.

[30] Lines 104-111. Precisely the same contrast is employed at fol. 9vA "Hec enim maioritas caloris debet referri ad occupationem subiectorum et non ad metam intensionis."

[31] ". . Complexio temperata dicitur esse in medio et inter intermissionem et remissionem"; Urso, ed Sudhoff, lines 119-120. I take "intermissionem" to be a misreading of "intensionem."

[32] V. P. Zubov, "Traktat Nikolaia Orema 'O konfiguratsii kachestv,'" in *Istoriko-matematicheskie issledovaniia*, 1958, *11*: 612-613.

[33] "Equalitas ergo complexionis est semper ut remaneat secundum proportionem unam in suis qualitatibus, quando ergo aggregatur in corpore uno ut sit temperate complexionis et equalis compositionis, tunc Gal. vocat illud meliorem formam corporis. Et iam ostensum est quod meliori formarum non est latitudo superioris et

Thus Henry's discussion of medicinal degrees proves to be of considerable interest. There is no indication that it had any direct or even indirect influence upon the Montpellier theories of two generations later, to be sure. But it does at least help to confirm the contention of Alexandre Birkenmajer[34] that the physicians of the early thirteenth century allow us to see something of how natural philosophy and Aristotelian ideas entered academic circles. And beyond that it stands as a good summation of the accomplishments of one part of twelfth-century medicine, at a time when Western scholars had virtually to discover systematic thought for themselves.

The following text of Henry of Winchester's treatment of medicinal degrees is based on MS Oxford, New College 171, fols. 3vB-4rA (*N*). The same text may be found in MS Basel, Univ. D. III. 20, fols. 125rB-126rA (*B*), and a part of it (the first 55 lines) in MS Oxford, Corpus Christi College 490, no. 91 (*C*). I have collated *B* and *C* with *N*; their variant readings proved in the main to be unimportant. I have identified below only a few of these variants: those in *B* which seemed to me of interest, and those in which *B* and *C* agree.

Henry's references to other medical authorities have been marked with a capital letter in superscript and identified at the end of the text, following the variant readings.

De gradibus. Dicendum est igitur quid sit gradus et quot sint gradus et quo nomine quilibet gradus censeatur et quot partes habeat, utrum latitudo sit inter gradus et inter partes graduum et inter optimam temperantiam et primum gradum et quedam alia dubiatabilia que circa gradus emergunt.

Iacobus alkindri describit gradum hoc modo: gradus est sedecupla proportio vel aliqua submultiplicium partium eius que continua proportionalitate distinguitur[A] — "sedecupla proportio" quantum ad quartum gradum, "vel aliqua submultiplicium partium eius" quantum ad alios tres gradus. Constituatur enim unitas quasi optima temperantia; senarius denarius qui sedecuplus est ad unitatem, quasi quartus gradus, octonarius est quasi tercius gradus, qui subduplus est ad senarium denarium et duplus ad quaternarium; quaternarius est quasi secundus gradus qui subduplus est ad octonarium et duplus ad binarium, binarius est quasi primus gradus qui duplus est ad unitatem et

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inferioris, quia iam haberet intensionem et remissionem si latitudo esset equivoca ad diversa." Haly Rodohan, comm. *Tegni*, Lib. I, tr iii, comm. [2] (Venice, 1483; fol. 153vB)

[34] Alexandre Birkenmajer, "Le role joué par les médecins et les naturalistes dans la réception d'Aristote au XII-e et XIII-e siècles " *La Pologne au VI Congrès International des Sciences Historiques* (Varsovie/Lvov, 1930), pp. 1-15.

subduplus ad quaternarium. Est ergo gradus sedecupla proportio quantum ad quartum gradum vel aliqua submultiplicium partium eius; quantum ad alios gradus, partes eius continua proportionalitate distincte sunt viii^{nus}, quaternarius, binarius, et unitas.

Est et alia descriptio magis usitata, talis scilicet: gradus est excessus qualitatis ab optima temperantia sensu determinabilis. Sed obicitur huic descriptioni et predicte hoc modo. Quilibet gradus habet tres partes principales et quelibet illarum partium est excessus ab optima temperantia sensu determinabilis; ergo quelibet illarum partium est gradus. Si predicta descriptio est conveniens, et ita xii sunt gradus partiales (cum quilibet gradus tres habeat partes principales). ITEM quilibet illorum graduum partialium habet partes, et sic potest probari graduum infinitas. Est et tercia descriptio que ceteris prioribus est longe competentior, hec scilicet: gradus est meta intensionis a temperato ad distemperatum secundum singulas sui partes principales sensu determinabilis. In hoc quod dico "secundum singulas sui partes principales" excludo partes graduum; singulum enim non dicitur nisi de tribus ad minus. Pars etiam gradus latitudinem non habet.

Sequitur quibus nominibus censeantur gradus. Primus gradus dicitur dominium, quia ei dominatur sensus humane complexionis; sensum dominari excessui est ipsum posse sustinere tantum excessum et maiorem sensu determinabilem sine lesione, et hoc nomen attribuitur primo gradui respectu sue partis finalis. Secundus gradus dicitur adequatio, quia ei adequatur sensus humane complexionis; sensum adequari excessui est sensum posse sustinere tantum excessum et non maiorem sensu determinabilem. Posset quidem sustinere illum excessum sine lesione qui est inter secundum gradum et tercium, si quis est ibi, sed ille non est sensu determinabilis; et hoc nomen assignatum est secundo gradui respectu finalis sue partis. (4r) Tercius gradus dicitur lesio, quia ledit sensum humane complexionis, sine destructione tamen. Quartus gradus dicitur destructio, quia destruit sensum humane complexionis multo usu; vel alia ratione (que melior est) quia si gustetur alia res calida vel frigida in iiii^{to} gradu, postmodum multo spatio rerum applicatarum sapor non potest discerni.

Sequitur quot partes habeat quilibet gradus. Quilibet igitur gradus habet tres partes principales quas G. numeros appellat in *Tegni*, dicens: "Si decem quidem numeris secundum calidius excedat aliquid ab eo quod est secundum naturam" etc.[B]

Sequitur utrum latitudo sit inter gradus; quod sit sic probatur. Commisceantur alia duo liquida quorum unum sit calidum in fine secundi gradus et aliud in principio tercii. Hoc est compositum ex minus calido et magis calido et trahit caliditatem suam tantum ex componentibus; ergo est magis calidum minus calido et minus calidum magis calido, et ita est magis calidum eo quod est calidum in fine secundi gradus et minus calidum eo quod est calidum in principio tercii gradus, et ita latitudo est inter finem secundi et principium tercii. Eodem modo potest probari quod latitudo sit inter optimam temperantiam et principium primi gradus, commixtis optime temperato et eo quod est calidum in principio primi. Similiter probatur quod latitudo sit inter partes graduum principales. Concedimus quod probatum est; vel si placet, possumus respondere ad predicta instando predicte illustrationi hoc modo. Sirupus iulap fit ex duobus, ex re calida id est zuccara et re frigida id est aqua; ergo minus infrigidat quam aqua et magis quam zuccara, quod falsum est. Magis enim infrigidat sirupus iulap quam aqua quia maiorem habet cum membris affinitatem et profundius penetrat. Item excessus ille qui est inter secundum gradum et tercium maior est quam excessus qui est in fine secundi gradus; ergo magis immutat gestum quam ille, sed ille est sensu determinabilis, ergo et iste. Si iste est sensu determinabilis, ergo vel est gradus vel pars principalis gradus, cuius contrarium dictum est. Solutio. Dicimus quod aliquem excessum esse sensu determinabilem est ipsum posse determinari quod sit excessus et quantus sit excessus. Alterum istorum deest huic. Quod enim sit excessus determinat sensus humanus, sed quantus sit excessus non potest determinare. Fluctuat enim inter finem secundi gradus et principium tercii. Dicimus ergo quod non est sensu determinabilis.

Item potest probari infinitas esse temperantias veras sic. Sit quod caliditas alicuius corporis sit in iiii^{to} gradu frigiditas eiusdem in primo; siccitas similiter in iiii^{to} et humiditas in primo. Intendantur frigiditas et humiditas versus quartum gradum, remittantur siccitas et caliditas versus primum; quantum intenduntur hee ascendendo tantum remittuntur ille descendendo per eandem latitudinem. Ergo in alio puncto sibi occurrent; tunc ergo nulla qualitas aliam vincet, et sic hoc corpus erit optime temperatum quoniam in eo nulla qualitas aliam vincet, et ita probari potest infinitas esse temperantias veras. Solutio. Dicimus quod positio impossibilis est. Si enim caliditas alicuius corporis sit intensa in quarto gradu, frigiditas eiusdem erit remissa citra optimam temperantiam tanta latitudine quanta latitudo est inter optimam temperantiam et quartum gradum, quod probatur sic. Sit quod aliquod corpus sit optime temperatum; in eo nulla qualitas aliam excedit. Incipiat intendi caliditas et intendatur usque in iiii^{tum} gradum. Caliditas huius intenditur; ergo frigiditas eiusdem remittitur, et utraque est in (4rB) temperantia. Una intenditur ultra optimam temperantiam, ergo reliqua remittitur citra omnem gradum; et una intenditur usque ad quartum gradum, ergo alia remittitur tantum citra; et ita quanta est latitudo ultra temperantiam tanta est latitudo citra, quod concedimus.

Sed queritur quare gradus non sunt distincti in latitudine illa que est citra temperantiam sicut in latitudine que est ultra. Dicimus quod illa remissio qualitatis tanta sensu non determinatur, ratione tamen dictante perpenditur. Rationabile enim est quod quantum una qualitas intenditur, tantum sua contraria remittitur. Cum ergo remissio illa sensu non sit perceptibilis, non distinguitur in ea gradus, quoniam gradus est excessus vel recessus ab optima temperantia sensu determinabilis.

ITEM videtur quod partes principales graduum latitudinem habeant. Habemus enim in *Dietis universalibus* quod salsa et unctuosa sunt calida in fine secundi gradus; ibidem habemus quod salsa calidiora sunt unctuosis.[C] Ergo finis secundi gradus habet latitudinem. Solutio. Tripliciter dicitur aliquid calidius alio. Quantum ad occupationem subiectorum, secundum quod ventres in hieme sunt calidiores quam in estate, id est plena sunt subjecto caloris, scilicet fumi et spiritus retenti per frigiditatem aeris; secundum hoc etiam concedimus quod puer est calidior iuvene. Secundo modo dicitur aliquid calidius alio quantum ad metam intensionis, secundum quod ventres sunt calidiores in estate quam in hieme, unde urine intensiores sunt et febres magis acute; et secundum hoc dicimus quod iuvenes sunt calidiores pueris. Tercio modo dicitur aliquid calidius alio quantum ad celeritatem effectus, secundum quod salsa sunt calidiora unctuosis, quia cicius calefaciunt et profundius penetrant; unctuosa autem opilant. Sunt ergo salsa et unctuosa eque calida quia in fine secundi gradus qui latitudinem non habet et hoc quantum ad metam intensionis; salsa tamen calidiora sunt unctuosis quantum ad celeritatem sui effectus.

ITEM potest probari quod nichil est frigidum in iiii^{to} gradu hoc modo per sapores. Quinque sapores sunt attestantes calori: dulcis, unctuosus, salsus, amarus, acutus. Quatuor attestantes frigiditati: ponticus, stipticus, acetosus, et insipidus; nec sunt plures simplices. Ponticus est testimonium frigiditatis in tercio gradu, stipticus et acetosus in secundo, insipidus in primo. Res ergo que est frigida in iiii^{to} vel habet simplicem saporem vel compositum. Simplicem non potest habere, quia nullus simplex sapor attestatur frigiditati ultra tercium gradum: compositum non potest habere, quia si aliquis sapor componitur ex duobus frigidis, totalis debet esse magis frigidus minus frigido et minus frigidus magis frigido; sed non est aliquis magis frigidus quam ponticus, id est attestans maiori frigiditati, ergo talis sapor compositum non erit adeo frigidus ut ponticus; et ita nullus sapor attestatur frigiditati in iiii^{to} gradu, et ita nichil est frigidum in iiii^{to}. Quod autem aliquid sit frigidum in iiii^{to} gradu probatur hoc modo auctoritate G., dicentis in *Tegni*: "Si x quidem numeris secundum calidius excedit" etc.[B] "Numeros" ibi vocat partes principales graduum. Tres ergo numeri faciunt gradum unum, decimus numerus est principium quarti gradus. Est ergo sensus. Si discrasia corporis est calida in principio iiii^{ti} gradus, salubris causa debet esse frigida in principio quarti, et ita vel inutilis est doctrina G. vel aliquid est frigidum in quarto gradu. ITEM in *Dietis particularibus* habetur quod opium est frigidum in iiii^{to} gradu.[D] ITEM in *Dietis universalibus* in tractatu saporum dicitur quod si tantus sit calor quod ei dominetur sensus humane complexionis, res erit calida in primo gradu; si ut ei adequatur, erit calida in secundo; si tantus ut ab eo ledatur sine destructione erit calida in tercio; si tantus ut ab eo destruatur, erit calida in quarto. Et adicit, simile intelligendum est de frigiditate siccitate et humiditate.[E] Ergo aliquid est frigidum in iiii^{to}; quod concedimus. Sunt autem plures sapores (4vA) simplices quam distincti sint ab auctoribus, et maxime decimus sapor qui est in re frigida in quarto gradu; de illo tamen non fecerunt auctores mentionem quia non est sensu perceptibilis. Quare autem sapor rei calide in iiii^{to} gradu sit sensu perceptibilis et sapor rei frigide in iiii^{to} non sit perceptibilis, patet ideo sicilicet quia frigiditas mortificatoria qualitas est et sensus sopitiva, verum tamen intensa frigiditas impedit perceptionem; caliditas autem est sensus excitatoria et non impedit.

ITEM queritur utrum partes principales graduum sunt subiective vel integrales. Non videntur esse subiective, quia si essent suiective quelibet pars gradus esset gradus et ita xvi gradus — iiii^{or} scilicet principales et xii secundarii; auctores tamen non faciunt mentionem nisi de iiii^{or}. Si sunt integrales, destructa parte principali tocius integralis destruitur totum integrale; et ergo destructa prima parte primi gradus destruitur primus gradus. Et si nulla qualitas habet excessum in prima parte primi gradus, prima pars primi non est; et si prima pars primi non est, primus gradus non est. Ergo si nulla proprietas habet excessum in prima primi, primus gradus non est. Sed potest esse quod aliqua proprietas habeat excessum in fine primi gradus et nulla in principio primi; et ita ex hoc sequitur primum gradum esse et primum gradum non esse. Solutio. Dicimus quod partes integrales sunt gradus, et non sunt principales eo modo ut ad destructionem alicuius earum sequatur destructio tocius, sed principales id est sensu determinabiles.

Item queritur de auctoritate illa que invenitur in prologo *Libri graduum*, hac scilicet: quod calidum est in primo gradu calidius est equa complexione, minus tamen calidum calore eque complexionis.[F] De prima parte auctoritatis nulla est dubitatio, quia quod calidum est in primo calidius est vere temperato. Sed de eo quod sequitur potest dubitari; quia si calidum in primo gradu minus calidum est calore eque complexionis, accidit calidum in primo esse magis calidum vere temperato et minus calidum. Solutio. Dicimus quod equa complexio dissimiliter accipitur in illa auctoritate. Cum primo ponitur dicitur equa complexio vere equa, in qua non est excessus alicuius iiii^{or} qualitatum, et secundum hoc vera est prior pars auctoritatis. Cum secundo loco ponitur equa complexio, dicitur relative equa, illa scilicet que usque ad finem secundi gradus potest habere excessum (quod innuit Isaac in *Dietis universalibus* cum dicit humana complexio temperate calida est et humida in secundo gradu);[G] quod tali equa complexione id quod calidum est in primo gradu sit minus calidum nulli dubium est

Variant Readings

2 latitudo *corr. N. mg. ex* longitudo
14 sedeculpa *corr. N. ex* sedecupla
15 *post* gradus *add. B* ergo
16 *post* sunt *add. B ut*
22 si. sed *B*
26 est *tr. BC post* competentior
52 magis calido et minus *BC*
55 *post* est^{1} *del. N* calidum eo quod est calidum
62 iulap *correxi ex* gilap *N* (gilem *mg. N*), violaceus *B*/id est *corr. N. ex* et/zuccara: zinzibere *B*
64 iulap: violaceus *B*
69 dictum *ins. N*
70 determinare *B*
77 similiter *B* simili *N*
87 sit^{2} *B* si *N*, *corr. N ex* sit
94 queritur *mg. N*
96 dictante *correxi ex* dictancte *N* dictanre *B*
99 *post* excessus *del. N* est
106 subrecta (?) *N*
122 frigiditatis: frigide complexionis *B*, vel frigide complexionis *mg. N*
130 *post* ponticus *add. B* id est non atestabitur tante frigiditati
161 proprietas: qualitas *B*
166 *post* determinabiles *add. B* ad dam illarum partium que non sunt sensu determina.

References

A Unidentified; see above, p. 64.
B Galen, *Liber tegni*, Liber III, lectio 97; *Articella* (Venice, 1483), fol 193vA.
C Isaac, *Liver dietarum universalium*, lectiones xvii, xv, *Opera Ysaac* (Lyons, 1515), (I) fols. 45rA, 39rB
D Isaac, *Liber dietarum particularium*; *Opera Ysaac*, (I) fol. 112rA
E Cf Isaac, *Liber dietarum universalium*, lectio xv; *Opera Ysaac*, (I) fol. 39rB.
F Constantine, *Liber graduum; Opera Ysaac*, (II) fol 78rB.
G Isaac, *Liber dietarum universalium*, lectio xvii, *Opera Ysaac*, (I) fol 43rB.

THE ROOTS OF THE VITALISM OF XAVIER BICHAT

ELIZABETH HAIGH

Marie François Xavier Bichat (1771-1802) is known as one of the last of the major theorists of vitalism and, as such, he belongs to a more archaic theoretical tradition than French physiologists of the last century such as Magendie, Flourens and Bernard. Bichat is also credited with creating the modern science of histology for he analyzed the structures of the body and found that they can best be understood as compounds of elemental tissues. He determined that there are twenty-one such tissues. Though his vitalism can be considered separately from the tissue theory, the latter work quite clearly sprang from and was supported by Bichat's vitalist assumptions.

In the Preface to *Recherches sur la vie et la mort* which was first published in July of 1801, Bichat wrote that life is "the collection of those functions which resist death." Superficially, this definition is merely a truism. But at another level, it is an expression of a vitalist's basic conviction that a living organism must be understood as a focus of reaction against the forces of decay and decomposition which continuously assail it and finally prevail at death. In all his writings, Bichat maintained and emphasized that life and non-life are distinct categories of nature each having its own forces and laws. This gave coherence to all his work in anatomy, physiology and pathology, including that on tissues. But *Vie et mort* is the work in which Bichat specifically discussed the differences as he saw them, between animate and inanimate bodies and, in it, he described what he considered to be the forces of inanimate nature. The twenty-one tissues described at length in the *Anatomie générale* of 1801 were seen to be the specific location of these vital forces.[1]

Bichat's physiological theory incorporated many elements which had been developed in the eighteenth century and it was born of a multitude of observations, demonstrations and speculations. Though he admitted as much, Bichat's references to those who had influenced him were brief and frequently dismissive. In the Preface to *Vie et mort*, he pointed out that persons who read Aristotle, Buffon, Morgagni, Bordeu and Haller and all those whose works were similar would see certain sources of his ideas there. It was not his intention to deceive his readers, he added, for "these authors are so well known that I thought it pointless to note the critical citations exactly."[2] So he left it up to his readers to puzzle out his sources if they were inclined to such an exercise.

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[1] It has been demonstrated that Bichat's tissue theory springs from the work of the French Ideologues, specifically from Philippe Pinel's classification of pathology Pedro Lain Entralgo in "Sensualism and vitalism in Bichat's *Anatomie générale*," *J. Hist Med.*, 1948, *3*: 47-64, wrote of the tissue theory with great admiration, but he felt its vitalistic trappings were "a stupidly conservative doctrine which seriously detracted from the beauty of the picture". This judgement obscures Bichat's own intentions, for he saw the tissues to be the seat of the vital properties. Entralgo's statement is an example of the fairly common trap of evaluating the relative merit of a theory or idea in terms of the proportion of "modern" content.

This paper is an attempt to discuss some of the major features of Bichat's theory of vitalism and to demonstrate that it is basically a synthesis of two distinct lines of speculation and investigation. That is, Bichat's arguments for the separation of life from non-life are much like those found in the work of members of the medical faculty of Montpellier, including François Sauvages, Paul Barthez and Jean Charles Grimaud. In turn, their arguments on behalf of the vitalist thesis can be compared to those of older animists such as Jean Baptiste Van Helmont and particularly of Georg Ernst Stahl. Though Bichat considered these various persons' arguments against mechanism to be sound, he was not comfortable with the vital properties and forces which they proposed. He dismissed souls, vital principles and other similar motive forces as abstractions without reality not far removed from occult forces. His own version of vital theory was given more modern trappings. He looked to the recently done work on the phenomena of sensibility and contractility to explain vital phenomena and provide it with its forces. The sensible and irritable phenomena of the organism had been investigated by Francis Glisson, Theophile Bordeu, Albrecht von Haller and Robert Whytt among others. Bichat believed that the existence of sensibility and irritability in living matter implied its separation from inert matter and upon these forces he constructed his theoretical system.

I

The living body was discussed by Bichat as though it is an island constantly assailed by the destructive forces of its surroundings. Growth occurs in a child, he wrote, because it is favoured with a superabundance of reactive forces; there is an equilibrium in an adult; with age, the destructive environment comes gradually to dominate so that effectively there is a balance between the forces of decay and the resistance of internal, vital forces.[3] To sum it up, life is "the collection of those forces which resist death."

Bichat took great care to explain to his readers why he did not believe life sciences could be properly treated as a branch of physical ones. One major difference between the two realms of nature is the variability of the one and the constancy and predictability of the other. "In no case," he wrote, "does a stone gravitate towards the earth with more force than normal; in no case does marble have more elasticity, etc. On the other hand, at each instant, the sensibility, contractility are excited, diminished and altered; they are almost never the same."[4] At one point, Bichat offered the intriguing conjecture that if physiology had developed before physics, persons might be speaking about the physiology of stars rather than the physics of animals. They might speak of crystals uniting by the excitement of reciprocal sensibility and planets moving because they are reciprocally irritated at great distances. But the laws, he maintained, are very different in their nature. With mathematics, one can calculate the return of a comet or the resistance of fluid passing though an inert canal; but to calculate the force of a muscle with Borelli, or the velocity of blood with Keil, or the quantity of air in the lungs with Lavoisier, wrote Bichat, is to build a solid edifice upon rolling sand.[5] Though this basic theme was expressed in many places and in various ways in Bichat's works, it is an argument which was not original to him.

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[2] Xavier Bichat, *Recherches physiologiques sur la vie et la mort* (Paris Brosson, Gabon, 1800), pp. i-iv

[3] *Ibid.*, 1st Article, pp. 1-2.

As the above quotations suggest, Bichat's vitalist position was at odds with much of the work being done in physiology. Since Newton's work on gravitation had given unprecedented coherence to the physical sciences, biologists in the seventeenth and eighteenth centuries had been searching for a corresponding conceptual basis upon which to build a biological theory. Possibly because of its seductive simplicity, the system which overshadowed most others for a time was that of Hermann Boerhaave (1668-1738) who denied the necessity of searching for physiological explanation apart from physical and mechanical principles. An alternative view whose basic tenets would commend themselves to Bichat was provided by Boerhaave's pious contemporary Georg Ernst Stahl (1659-1734), a physician and chemist who was impressed with those features of an organism which distinguished it from inert matter. He was to guide a multitude of persons in the seventeenth and eighteenth centuries who were not content to view a living body as an intricate interworking of pulleys, levers and hydraulic mechanisms. As it must be in the final analysis for all vitalists. Stahl considered the most impressive feature of living matter to be its freedom from decay or decomposition as long as life is present. In *Theoria Medica Vera* of 1707, written while Stahl was at the University of Halle, he defined life as "the conservation of an eminently corruptible body, the faculty or force with whose aid the body is protected from the act of corruption."[6] Bichat's definition is strongly reminiscent of this one expressed almost a century earlier. Stahl was an animist who searched for life's secrets among the mysteries of an elusive soul which, he argued, moves, preserves and generally gives life to a body which would otherwise decay and merge into its inanimate surroundings. In general, he thought of the soul as a kind of motor force as well as an intelligent being which exercises its influence on the passive matter of the body through the intermediary of the nerves.

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[4] Xavier Bichat, *Anatomie générale*, 4 vols. (Paris: Brosson, Gabon, 1801), vol I, pp lii-lx.

[5] Bichat, *Vie et mort*, Article VII, Section I, pp. 92-93.

Though Stahl's system did not gain nearly the following that Boerhaave's enjoyed in the eighteenth century, it did fill an intellectual and philosophical gap in Europe. Even into the nineteenth century, animism and its intellectual child, experimental vitalism, were to be the theoretical basis for the teaching of Montpellier, Europe's oldest medical school. Stahlian animism was introduced there by François Boissier de Sauvages (1706-1767) who held the Chair of Medicine at Montpellier from 1744 until his death. Like most medical students at the time, he had been trained in the mechanistic principles of Boerhaave. But he came to feel that the extremism of the mechanistic arguments posed certain contradictions which could only be modified by adopting some animistic ideas. Conceding, for example, that drugs and poisons act largely due to the principles of mass, velocity, structure of the parts, caliber size and so on, Sauvages nevertheless emphasized that they act on an animated, not on a pure machine. How else, he argued, could a tiny grain of an emetic acquire enough force to lift a column of water nearly two feet in the body, a force equivalent to thirty pounds of water falling from the same height. He answered that the emetic does not act directly but rather through the intermediary of a living motor which he identified as the soul.[7]

It was Sauvages' student, Paul Joseph Barthez (1734-1806), whose writings were finally to be the most influential in Montpellier. Barthez' major theoretical work, the *Nouveaux élémens de la science de l'homme* of 1778 opened with the predictable reasons given against the adequacy of mechanical and chemical analyses and explanations for the phenomena of life.[8] Barthez argued that though chemistry could analyze the composition of humours, it could only do so apart from the body and thus apart from life. And though mechanics could account, for example, for the structure of the lung, it could not account for respiration. Though Barthez admired Stahl and other animists for having refuted the sect of the mechanists, he was not a Stahlian himself. In place of the soul which seemed to many perons to be an occult hypothesis by the latter part of the eighteenth century, Barthez introduced a force which he named the *principe vitale* or vital principle. He thought it produces all the motions necessary for vital functions and he separated these from the rational functions of the body which alone were said to be due to the soul. According to Barthez, this vital principle is elusive, insubstantial and separate in nature from the body and the soul.[9] From a modern perspective, it is clear that the vital principle and reasoning soul were as hypothetical as the animists' soul. Bichat recognized this when he wrote some years later of those who could not distinguish between the mere enumeration of phenomena and their explanation. In any case, Barthez clearly felt that he had made a major theoretical advance in the life sciences.

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[6] Georg Ernst Stahl, *Vrai théorie médicale* in *Oeuvres médico-philosophiques et pratiques de G E Stahl*, ed by Theodore Blondin. 6 vols (Paris. J B Baillière, 1860), vol. III, p. 43. Stahl's arguments concerning the role of the soul in the body and their interaction are contained, for the most part, in *Vrai théorie médicale* and in *Mécanisme et organisme* in *Oeuvres médico-philosophiques*, vol I

[7] François Boissier de Sauvages, "Dissertation sur les médicaments," *Les chefs d'oeuvres de Monsieur de Sauvages*, ed by E H Ratte 2 vols. (Lyons V. Reguilliat, 1770), vol. II, pp 1-97 Sauvages offered a multitude of examples to make his point

[8] Paul Joseph Barthez, *Nouveaux élémens de la science de l'homme* 2nd ed., 2 vols , (Paris. Goujon et Brunot, 1806), vol I, pp. 27-46

In his discussion of the human body, Barthez made a distinction between various types of vital phenomena. That is, he considered it significant that the muscular faculty of movement is extinguished soon after the nervous or vascular connections to it are severed, while intestinal movements continue for hours after death and the heart removed from an animal retains a strong irritability. This must be, he postulated, because these latter organs have a great deal of the vital principle and are less dependent upon sympathetic connections than are the muscles of voluntary activity. The organs with a large proportion of vitality do not require rest though muscles do. Sleep, Barthez reasoned, is the repose of muscular movements and it is produced by alterations of the brain which is the principle centre of these forces. On the other hand, the heart, arteries, respiratory muscles, stomach and intestines keep up their movements even during sleep for activity there must be continuous for life to be supported.[10]

This was a relatively minor point for Barthez. In fact, the second volume of *Nouveaux élémens*, and thus this particular discussion, appeared in print only with the second edition of the work in 1806. But for Bichat, this distinction between organs which function continuously and those which function only intermittently was to be central to his system.

It is likely that Bichat's ideas concerning this question came to him from Jean Charles Grimaud (1750-1789), a student of Barthez who developed this particular part of his teacher's system at some length. He decided that there is a natural division of the body into what he labelled external and internal functions. The former are those which require rest and it is with these that the animal relates to its surroundings, becomes conscious of its environment and responds to sensations. The latter functions maintain such essential activities as nutrition, glandular secretion, respiration, reproduction and so on. To incorporate this distinction into Barthez' vital theory, Grimaud subdivided the vital principle. The external functions were said to be carried out by a motor animal force *(force motrice animale);* the internal functions depend upon a vital motor force *(force motrice vitale).* The latter is regulated by the internal vital sense *(sens vital interieur)* whose activity is not conscious so that these vital functions are not dependent on the will. This internal vital sense is directed by a sensory centre in the stomach while the brain receives the external and conscious impressions.[11] Grimaud's division can be seen to be a refinement of the ancient distinction between the vegetative, animal and rational souls.

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[9] *Ibid.*, pp. 62-96

[10] *Ibid* , vol. II, pp. 143-162.

Bichat surely fits into the Montpellier tradition to some degree. His father took a medical degree there in 1769 and Barthez was one of his teachers. The younger Bichat never attended a formal medical school for all of France's professional schools and societies were closed for a time during the French Revolution. His education as a physician and physiologist was received through an apprenticeship to the surgeons Marc Antoine Petit of Lyons and, later, Pierre Desault of Paris. Thus, Bichat's intellectual debt to certain physicians of Montpellier can only be evaluated through his writings.

It is clear that for Stahl, Sauvages, Barthez, Grimaud and Bichat, the organism was seen to be a kind of island of vitality maintaining its uniqueness and integrity as long as the soul or some vital force is present. Aside from this general view of the meaning of life, the most persuasive evidence for Bichat's link with Montpellier is his division of the organs of the body into external ones which sleep or otherwise suspend their activity for a time, and internal ones which function continuously. With this categorization which was central to the vital theory developed in *Vie et mort* and assumed elsewhere, Bichat established his link with Grimaud and consequently with Stahl, Sauvages and Barthez. In *Vie et mort,* he discussed the animal life, which was also known as the external life, and the organic life, also known as the internal life. The latter is responsible for the functions of nutrition, blood circulation, digestion, growth and so on. That is to say, it supports those most basic functions without which life could not exist. When the animal life is added to the body as well, the animal is able to establish relationships between itself and its surroundings. The organic life is passive and largely unperceived, somewhat like the plant life of which the ancients wrote. It is centred in the heart. With the animal life, an organism becomes conscious; it senses its surroundings, reflects on its sensations, moves voluntarily and communicates its fears, desires, pleasures and pains.[12]

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[11] Jean Charles Grimaud, *Mémoire sur la nutrition* (Montpellier: Jean Martel ainé, 1787), pp 5-40, *Cours complèt de physiologie*, 2nd ed., 2 vols (Paris Egron, Gabon, Crochard, l'Heureux, Bechet et Lanthois, 1824), vol. 1, pp 38-39

The distinction between the two lives was crucial for Bichat and a large part of *Vie et mort* was given to elaborating the differences between them. Animal life is symmetrical while organic life is irregular in form; animal life is harmonious in its activity while organic life does not require regularity of motion; animal life operates intermittently while organc life must be constantly active; understanding belongs to the animal life but passions belong to the organic life; animal activity commences at birth whereas organic activity is present from conception; animal life alone can be educated. Because the animal life cannot exist without the organic life, the former leaves the body first at death.[13] In *Anatomie générale*, Bichat made it a point to learn precisely which forces of each of the lives are present in each tissue. Thus, though Bichat went beyond Barthez and Grimaud in defining and elaborating this animal-organic division, he was well within the confines of the Montpellier tradition.

In an introduction to *Anatomie générale*, Bichat conceded that the art of medicine is much indebted to many physicians of Montpellier for having deserted the theory of Boerhaave and having followed Stahl in preference. But, in leaving a bad path, he argued, they had taken another so tortuous that they would never find its termination.[14] That is, he would not accept their explanation of vital phenomena in terms of soul or vital principles, maintaining that these sorts of explanations belong in the category of first causes which are not accessible to the scientist. In *Vie et mort* he objected to such explanations as that of "digestive power" of which Grimaud had written arguing that the function of digestion and every other function of the body is properly understood as one of the products of a larger force. Such abstractions and definitions could be multiplied indefinitely. They needed to be replaced with vital laws which presumably could be experimentally demonstrated.[15] These laws were suggested to Bichat in the forces of irritability and sensibility which, unlike souls and vital principles, can be observed, measured and examined.

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[12] Bichat, *Vie et mort*, Art I, pp. 1-9. The main features of Bichat's theory are summarized in considerable detail in A. Arène, *Essai sur la philosophie de Xavier Bichat* (Lyons A Rey, 1911), pp 5-76

[13] Bichat, *Vie et mort*, Art VII, pp 92-93

[14] Bichat, *Anatomie générale*, vol I, p lv.

[15] Bichat, *Vie et mort*, Art VII, pp. 129-133.

II

Deriving from the animal-organic division, Bichat distributed various forms of the properties of sensibility and contractility among the organs, thus explaining how the body functions. He maintained that living matter is indeed distinguished from that which is inert but only because the former exclusively possesses the properties of sensibility and contractility. In the internal, organic life, sensibility was judged to be the faculty of receiving an impression in a particular organ; in the external animal life, the impression must also be transferred to the brain. The former or *organic sensibility* is common to plants and animals and, because of it, glands secrete, the heart senses the influx of blood and contracts to expel it and the stomach responds to the presence of food. *Animal sensibility* is activated when external organs such as the skin, eyes, ears and even mucous membranes of the nose and mouth receive impressions. The brain is conscious of these. And the more of the *animal sensibility* is present, the more perfect is the animal for it is from this faculty that sensations, perceptions, pain and pleasure flow. With this, presumably, comes intelligence.

The faculty of sensibility in any organ is capable of activating a corresponding faculty of contractility. The sensibility can be subdivided. That is, *sensible organic contractility* controls organs such as the heart, stomach, and intestines. Though these organs belong to the organic life, one can consciously perceive their functions. An *insensible organic contractility*, on the other hand, governs functions such as those of the excretory ducts, secretion, lymphatics and so on, all of which are absolutely unperceived. But even this difference, Bichat thought, is in the final analysis merely superficial, for both types pertain only to the internal life and are independent of the will. In fact, they are connected by a series of intermediate gradations.[16] Thus it is clear that the sensibility and contractility employed in Bichat's system were absolutely tied to the animal-organic division which he had taken from Barthez and Grimaud.

In the eighteenth century, the forces of irritability or contractility and sensibility reconciled many of the extremes of the mechanist and vitalist positions about the basis of life, and by Bichat's time they were used by pious Christians and crusading atheists alike to support their various theses about the nature of living matter. The name of Albrecht von Haller is most directly associated with the elucidation of these forces and, indeed, he made them famous by experimentally sorting out their distribution at the level of body organs and parts. Haller himself related that the term *irritabilitas* was introduced as a biological concept by Francis Glisson (1597-1677).[17] In a number of works, Glisson wrote of parts of the body which experience a sensation of being molested and in turn show evidence of irritation in the ensuing attempts to remove the offending agent. The most mature form of the theory appeared in a *Tractatus de ventriculo et intestinis* in which Glisson came to consider a "natural perception" to be independent of nerves and located in the very fibres of the organs. Thus it is that the organic structure itself was seen to be endowed with the special property of *irritabilitas* and all types of activity are a consequence of that property. It becomes conscious only when it encounters the nerve. The lowest of three levels of irritability is the *perceptio naturalis* which is both unconscious and independent of the nervous system. Rather, it is confined to the fibre in which it originates. It exists in cases such as heart pulsation or intestinal motion where no sensation is involved. The second level, *perceptio sensitiva*, comes to consciousness. Finally, *perceptio animalis* is conscious, deliberate, and controlled by the will. Correspondingly, there are three types of motion.

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[16] *Ibid*, pp. 112-133.

One of the most significant features of Glisson's work is that he considered these properties of perception and motion to exist within matter itself rather than being imposed upon the body by something having a different nature and presumably existing outside the organization of matter as the soul and vital principle must do. The striking correspondence between these properties and those advanced by Bichat one and a half centuries later might well be more than mere coincidence. But between Glisson and Bichat, there were a number of physiologists and philosphers who developed the theme of the sensibility and irritability of matter and thus made it accessible to Bichat.

One such person was Theophile Bordeu (1722-1776), a student of Montpellier and a vitalist. His most important work, both in terms of vital theory and the theory of sensibility and irritability, was the *Recherches anatomiques sur la position des glandes et sur leur action* of 1752. His object in writing it was to prove that glandular secretion consists in a true elaboration of liquid rather than in mere physical separation of elements furnished by the blood as the mechanists maintained. For example, he demonstrated that the parotids are so situated anatomically that jaw movements cannot compress the gland. Nor can pressure of the eye force secretion of tears from lachrymal glands. And so it was in the case of all the glands examined by Bordeu.

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[17] Albrecht von Haller, "A Dissertation on the Sensible and Irritable Parts of Animals" (London: J. Nourse, 1755), A contemporary translation with an introduction by Owsei Temkin, *Bull. Hist. Med.*, 1936, *4*: 693. Temkin has demonstrated that the concept of *irritabilitas* as used by Glisson is, in fact, much older and rooted in the classical tradition in his article, "The Classical Roots of Glisson's Doctrine of Irritation," *Bull. Hist Med.*, 1964, *38*: 297-328.

Presumably then, each gland must somehow deliberately choose those parts of the blood which are appropriate for its secretion. Bordeu attributed this sort of calculated force on the part of an organ to "une éspèce de sensation," a sensibility inherent in an organ and tied to the nerves. Every one of a multitude of examples was designed to show that whenever a gland secretes its product, irritability must be present to provide a signal to sensibility which then permits elaboration of the glandular product. Secretion depends upon a combination and interaction of irritation, excitation, sensibility and nervous action.[18] In subsequent works, this force of sensibility was generalized throughout the body for, in 1754, Bordeu wrote that "each organic part of the living body has nerves which have a *sensibility* . . . the sensibility is of different types and in general, more or less apparent in different functions."[19] And in 1768, he wrote that "sentiment occurs in all functions; it directs them all. It dominates in illnesses; it directs the action of remedies."[20]

Bordeu had been a student of Sauvages' at Montpellier and this might have accounted for his vitalism. But it is significant that like Glisson, he came to view the vital functions as the result of a distinct principle inherent within the very material of the body itself. Though he wrote of a soul, its functions were seen to be more restricted than Stahl and Sauvages had thought them to be. Bordeu considered it a spiritual entity and the seat of conscious sensations, emotions and rationality. He differentiated between sentiment and sensibility. Only the former was thought to depend upon the soul, for sentiment, he wrote, is always conscious. Sensibility, on the other hand, need not be consciously perceived. Thus, under normal conditions, the sensibility of the glands is not noticed by the animal. Rather, such functions depend upon a purely vital sensibility restricted to the organ itself.[21]

On a number of points, Bordeu's system was challenged by Albrecht von Haller (1707-1777), the most famous of the researchers in this area. Haller's major innovation in theory was the separation of the properties of irritability and sensibility and their localization in specific and often different organs. That is, Glisson and Bordeu had assumed that all the parts of the body possess both irritability and sensibility which are inseparable. Haller, on the other hand, argued that the most irritable parts are not at all sensitive while the most sensitive ones are, in turn, not irritable. Elements of his theory were present as early as 1747 when *First Lines of Physiology* was published. In it, he wrote of a *vis insita* or ability to respond to stimuli which is particularly strong in the heart and intestines. It can come neither from the brain nor from the soul since the heart of a recently dead animal retains the ability to contract for some time.

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[18] Theophile Bordeu, *Recherches anatomiques sur la position des glandes et leur action*, in *Oeuvres complètes de Bordeu*. 2 vols. (Paris. Caille et Ravier, 1818), vol I, pp. 45-142

[19] Bordeu, *Recherches sur le pouls par rapport aux crises*, in *Oeuvres complètes*, vol. I, pp. 420-421

[20] Bordeu, *Recherches sur l'histoire de la médecine*, in *Oeuvres complètes*, vol. II, p. 669

[21] *Ibid.*, pp. 667-669.

Haller's mature work on irritability and sensibility upon which most of his fame rests, was presented before the Royal Society of Gottingen in 1752 and subsequently published and widely translated. He reported that he explored the animal body part by part, organ by organ, to determine which areas respond to stimuli by showing signs of pain or agitation and those which contract and shorten upon being touched. The former were judged to be sensible and the latter to be irritable. The irritable but insensible organs were found to be muscles (including the heart and diaphragm), stomach and intestines, caecum, glands, genitalia, bladder and lacteals. The sensible parts of the body were all found to have a nervous supply. In fact, Haller thought that there is a direct connection between the nervous supply and the level of sensibility.[22]

Because he connected sensibility with the nervous system, Haller rather caustically attacked Bordeu's glandular theory claiming that glands, in general, must have very little sensation for they are supplied with very few nerves.[23] The difference between their conclusions is largely one of definition. Haller wrote, "I call that a sensible part of the body, which upon being touched transmits the impression of it to the soul; and in brutes, in whom the existence of a soul is not clear, I call those parts sensible, the irritation of which occasions evident signs of *pain* and disquiet in the animal."[24] For Bordeau, of course, Haller's definition had merely to do with conscious sensibility or sentiment and this was seen to be but a special case of a more generalized property of sensibility and consequently of the irritability connected with it.

One of Haller's most loyal disciples and incisive critics was Robert Whytt (1714-1764) of the University of London, with whom Haller disputed for years. Whytt pointed out at great length that many of Haller's conclusions about the properties of certain organs were often too rigid and hastily arrived at. He pointed out that almost every organ to which Haller had denied the property of sensibility can become acutely painful when it is diseased or inflamed. For example, gout occurs in the ligaments of the articulations and the muscle tendons inserted near them. Phrenitis is an affection of the meninges of the brain and pleurisy is an inflammation of the pleura as its very name implies. Haller had found all these organs to be insensible.[25] Whytt's long series of objections to his conclusions never persuaded Haller who was, personally at least, as irritable as the most active muscle fibre. But Whytt's arguments were to be taken into serious consideration by Bichat.

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[22] The most accessible copy of this work is "A Dissertation on the Sensible and Irritable Parts of Animals," *Bull. Hist Med*, 1936, *4*. 651-699

[23] *Ibid.*, pp. 673-678.

[24] *Ibid.*, pp 658-659.

This study of the inherent properties in living matter was of major importance to eighteenth-century physiology for it permitted physicians and biologists to examine and speculate about functions of the body without having to reconcile themselves to a hypothetical soul or, on the other hand, to the robot postulated by the mechanists. And so the properties were widely discussed. One self-styled disciple who outraged the pious Haller was the provacative Julien Offray de la Mettrie who shocked Europe with his *l'Homme machine* of 1747. He argued that since irritability had been shown to be an inherent property of matter, all body phenomena including intelligence must be consequences merely of physical organization. The topic of "Sensibilité" was discussed in Diderot's *Encyclopédie* in an article written by Bordeu's student Henri Fouquet. Many of Diderot's own literary works demonstrate his fascination with the forces of animated matter. Diderot came finally to a theoretical position akin to that of la Mettrie though he took care to state his point more tactfully, thus ensuring that most critics would not recognize the connection. In any case, he thought that sensibility is a universal property of matter and in inert nature it is merely masked.[26] Whereas the older vitalists had added souls and forces to the body to explain life, Diderot did the same thing by removing barriers to life thus releasing it from its inert state.

So ideas about irritability and sensibility were widely circulating by the time that Bichat began to examine the question of life. The accumulated influence of Glisson, Bordeu, Haller and Whytt can all be detected in Bichat's vital properties. Aside from his brief acknowledgement of Haller's and Bordeu's ideas in the Preface to *Vie et mort*, Bichat dismissed the contributions of these persons to his own ideas.

Unlike Haller, but like Glisson, Bordeu and Whytt, Bichat understood sensibility to be a precondition for irritatility in any structure. Haller and Whytt had limited their definition of sensibility to what we might label conscious feeling, for they conceded that pain was an indication of its existence. For Bichat, this was merely animal sensibility which corresponded to Bordeu's sentiment. In addition, Bichat took sensibility to include that imperceptible form which Bordeu had first argued makes the glands and other organs of the body function. This is an unconscious sensibility, that is to say, organic sensibility. Due to it, the heart is sensible to the influx of blood and the stomach responds to the presence of food. But an animal is rarely conscious of these activities.

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[25] Robert Whytt, "Observations on the Sensibility and Irritability of the Parts of Man and other Animals," *The Works of Robert Whytt* (Edinburgh: Becket, de Hondt and Balfour, 1768) Haller's responses to the first edition of this work are found in his *Mémoires sur les parties sensibles et irritables du corps animal*, trans. by Simon Andrè Tissot. 4 vols (Lausanne· Marc , Mic , Bousquet, 1756), vol. IV, pp 102-134 In the 1768 edition of his work, Whytt responded in turn and thus the argument continued for years.

[26] The evolution of Diderot's physiological theory is discussed by Jacques Roger in "Diderot et

Bichat argued, however, that the animal and organic contractilities are not absolutely separate categories. Rather, the former is the maximum of the latter. As had Whytt, Bichat raised objections to Haller's neat but rigid categorization of organic response. For example, though Haller had argued that ligaments are not sensible, Bichat countered that one must differentiate between stimuli. While they do not react to acids as Haller pointed out, they do produce pain if they are wrung, torn or distended. Again like Whytt, Bichat pointed out that inflammation of any organ raises organic sensibility until it becomes painful, conscious and thus animal sensibility. Though organs such as cartilage and serous membranes possess only obscure feeling, they can become very painful. Every organ, Bichat argued, has sensibility. But there are a thousand degrees of it between that limited to the organ itself and that perceived by the brain. Thus he reconciled the positions of Haller and Whytt.

Bichat, in a number of places, denied any connection between his ideas and those of Bordeu. His insistence serves, however, to confirm the suspicion of a strong influence rather than to allay it. In a discussion of the affinities of certain organs for particular substances, a property very similar to that which Bordeu had assigned to glands was invoked by Bichat to explain how it is that intestinal lacteals absorb only chyle and the larynx permits only air to enter it. The alteration of these affinities or sensibilities is disease. For example, openings of serous surfaces bathe for months in fluid which they do not imbibe. But if nature should increase their sensibility through, say, inflammation, it comes into equilibrium with that fluid and absorption takes place producing edema. Thus Bichat speculated that the theory of inflammation is nothing but the consequence of laws governing the passage of fluids into canals.[27] Though Bichat did not specifically indicate it, the sensibility of which Bordeu wrote at length is organic sensibility.

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l'Encyclopédie," *Les sciences de la vie dans la pensée française du XVIIIe siècle* (Paris: A. Collin, 1963), pp. 585-682.

[27] Bichat, *Vie et mort.*, Article VII, Section IV, pp. 105-111.

Of course, Bordeu and Bichat could both only speculate about organic sensibilities and contractilties or irritabilities for they could not demonstrate their existence experimentally. Thus, in spite of Bichat's protestations against using the soul or vital principle for physiological explanation, one can charge him with similarly employing purely hypothetical properties. In any case, his theory of physiology depended upon these properties absolutely. In *Anatomie générale*, Bichat made it clear that each one of the twenty-one individual tissues, with the possible exception of the nearly inert epidermis, must have organic sensibility and organic contractility. It is these vital properties which appropriate to themselves nutritive material from the blood, and all living tissues, whether muscle, bone or cellular tissue, must maintain some level of nutrition. These organic properties are the most primitive and basic of all and must be present in an organism for even the most rudimentary form of life to exist.

One cannot understand the *Anatomie générale* and the origin of histology without first having some appreciation of the vital forces discussed at such length in *Vie et mort*. In fact, these very forces were discussed at considerable length in *Anatomie générale*. Bichat argued that it is impossible, for example, to describe the life of the stomach in a general manner for it is a composite of serous, organic muscular, mucous, arterial and venous tissues. The serous surface is different from the mucous one and so on. So though the stomach *function* can be studied in a general manner, the *properties* and *life* of the organ can only be understood if it is decomposed into its tissues.[28] And it follows that it is only by knowing the distribution of life forces among the various tissues that one can come to understand the life forces of that stomach or any other organ.

The muscular tissue of the animal life, that tissue which most nearly approximates what we today call voluntary muscle, is the only one to possess *animal contractility*. *Sensible organic contractility* is restricted, for the most part, to the muscular tissue of the organic life. This follows from the fact that though we can often be conscious of the contractions of the heart or intestinal muscle, we can exercise no willed, that is to say animal, control over it. *Animal sensibility* is abundant in the nervous system of animal life and in the dermis. In addition, by using Haller's technique, Bichat also found small amounts in arterial tissue, the medullary system of long bones, and the nervous system of the organic life. But pain can be experienced in virtually every tissue with the exception of the epidermis, recall, when it becomes diseased, inflamed or stretched. For Bichat, this was due to the elevation of the organic sensibility to the animal level.

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[28] Bichat, *Anatomie générale*, vol. I, pp. lxxx-lxxxv

Thus, Bichat's influential tissue theory was intimately linked to his particular view of the nature of the living organism. Clearly, he erred in his belief that his vital forces belong on the same ontological plane as Newton's gravitational force and he misunderstood the precise meaning and function of a "scientific law." For this reason, though the study of the organic elements was to be developed by subsequent physiologists and anatomists, the vitalism was soon superseded and consciously discarded by most biological scientists in the nineteenth century.

INSANITY AS THE LOSS OF SELF: THE MORAL INSANITY CONTROVERSY REVISITED

S. P. FULLINWIDER

During the middle part of the nineteenth century the great dispute dividing the superintendents of American hospitals for the mentally ill was over the question of "moral insanity" — the idea that one's moral sense can be deranged without accompanying intellectual derangement. The leading protagonist in America was Isaac Ray, a founder of the Association of Medical Superintendents of American Institutions for the Insane and famous as a theoretician of medical jurisprudence.[1] Ray's following among the superintendents seemed secure until they began to fall away into the camp of New York State's Utica Asylum superintendent, John P. Gray, following the Civil War. Gray's position, as outlined by historians, was motivated by religious commitment to the ideas of sin and guilt, and by concern lest actual criminals find haven from punishment in institutions for the mentally ill.[2] Historians have also pointed out that the idea of moral insanity in a sense questioned the rationalistic premises of the Enlightenment, upon which the idea of insanity as loss of reason was based.[3] The present essay, by approaching the controversy from a different angle of vision, will attempt to bring to light an underlying debate about the nature of reality, and, further, to show that beneath the level of conscious articulation there existed an important problem of perception.

I will argue, first, that the diagnostic category "moral insanity" was applied to people who had become ambiguous to the psychiatrists of the day — i.e., the patient's emotional life, by becoming separated in perception from his public symptoms, had become private and unobservable, and his behavior, therefore, unpredictable. My contention will be that Ray accepted the fact of this ambiguity, but called it insanity, and that Gray refused to accept it as fact, partly because to do so was anxiety-provoking. Gray preferred instead explanations that would render such people predictable — explanations couched in terms of a mechanistic determinism he personally abhorred. I will try to show that Gray's perceptual strategies, which involved him in inconsistencies and distasteful admissions, can best be explained in terms of existential anxiety. Insanity, as he finally defined it, became what it had never been before, the loss of "self."

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[1] For biographical outlines of Ray, see Jacques M Quen, "Isaac Ray and his remarks on pathological anatomy," *Bull Hist Med*, 1964, *38*: 113-126; and Winfred Overholzer's "Editor's Introduction," to Isaac Ray, *A Treatise on the Medical Jurisprudence of Insanity* (Cambridge, Mass: Harvard University Press, 1962), pp vii-xvi The edition of Ray's *Treatise* which will be hereafter cited was published in 1838 by William D Tichnor and Co , Boston

[2] Charles E. Rosenberg, *The Trial of the Assassin Guiteau* (Chicago The University of Chicago Press, 1968), p 63; Gerold N. Grob, *The State and the Mentally Ill* (Chapel Hill University of North Carolina Press), pp 58-59.

[3] Eric T Carlson and Norman Dain, "The meaning of moral insanity," *Bull. Hist. Med*, 1962, *36*. 130-140 Actually, the authors' conceptual scheme, which explains much about the debate in Europe, does not well fit the American end of the debate

Early nineteenth-century American psychiatry did not use the word "self" as part of its scientific vocabulary. Of course, Benjamin Rush *was* early nineteenth-century American psychiatry, but one can look at his sources, Philippe Pinel of France, for example, and at other near-contemporaries, John Conolly, James Cowles Prichard and Esquirol, with the same result. Later writers would constantly emphasize the idea that the surest sign of insanity is behavior contrary to one's habitual behavior, but these men measured insanity not in terms of an individual norm or self, but in terms of the norm provided by the abstraction "mankind." In fact, the early writers argued that, far from being a departure from habitual behavior, insanity consisted in behavior that typified the individual's usual character: insanity was, in effect, an exaggeration of the person's usual vices.

When Rush wrote his famous *Medical Inquiries and Observations upon the Diseases of the Mind* in 1812, a general consensus was being reached on the categories of insanity. The trend was towards universal recognition of three: mania, dementia, and melancholia, with the latter the most unstable. With Rush, as with Pinel, the category mania was practically interchangeable with the word "madness." Here is brought into bold relief Rush's contention that the form an individual case of insanity took usually mirrored that person's character and temperament. "Madness," he defined as "phrenetic disposition" plus fever.[4] There was no ambiguity involved: the outward, observable symptoms perfectly mirrored the inward emotions. For Rush madness was literally anger become morbid and more or less lasting by damage to the brain.[5] "The symptoms of this state of derangement," he wrote, "when completely formed, as they appear in the body, are, a wild and ferocious countenance, enlarged and rolling eyes, constant singing, whistling and hallowing, imitation of the noises of different animals, walking with a quick step, or standing still, often with hands and eyes elevated towards the heavens."[6] The madman, or maniac, he wrote, is in a "rage."[7] As for his part,

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[4] Benjamin Rush, *Medical Inquiries and Observations upon the Diseases of the Mind* (Philadelphia· Kimber and Richardson, 1812), p 27.

[5] *Ibid.*

[6] *Ibid.*, p. 144.

[7] *Ibid* , p 150.

Pinel argued that the most frequent cause of "periodical insanity" was, besides change in atmospheric condition, "an undue indulgence of the angry passions."[8] Also, "He who has identified anger, with fury or transient madness . . . has expressed a truth, the profundity of which we are more or less disposed to acknowledge. . . . Paroxysms of madness are generally no more than irascible emotions prolonged beyond their ordinary limits. . . ."[9] Generalizing this point of view, John Conolly wrote in 1830 that insanity is the result of "exaggerations of common passions and emotions, such as fear, suspicion, admiration . . . which may occur in all minds, or be indulged in by all men, but which are cherished and dwelt upon only by a mind diseased. . . ."[10]

As for melancholia, Richard Burton summed up the wisdom of the ages when in 1621 he wrote: ". . . in this catalogue of passions, which so much torment the soule of man, and cause this malady . . . the first place in this irascible appetite may justly be challenged by *sorrow* — an inseparable companion, the *mother and daughter of melancholy, her epitome, symptome, and chief cause*. As Hippocrates hath it, they beget one another, and treat as a ring; for sorrow is both cause and symptome of this disease."[11] But it was just this most unambiguous of categories that was causing trouble at the turn of the century. Pinel had to admit that melancholics could as well be happy as sad, jubilant as depressed. Rush split the category in two — "tristimania" and "amenomania" — to keep the symptoms in proper relation with inward emotion as was required by his presumptions of order and clarity. But melancholia had begun an inexorable slide into ambiguity, towards a state in which the observable symptoms were perceived to mask rather than to reveal the inward emotional life of the individual.

It is within the wider context of what was happening to the overall nosology of insanity in the post-Rush years that the debate in America over moral insanity needs to be seen. The two positions — for and against moral insanity — were, from this perspective, different perceptual responses to emerging industrialism and urbanization, and an accompanying threat to perceptual order. The central antagonists were Isaac Ray, superintendent of asylums, first in Maine and then in Rhode Island, and renowned author of *Medical Jurisprudence* (1838), who, by the time of the Civil War was the elder statesman of asylum superintendents, and John P. Gray, Superintendent of the New York State Lunatic Asylum at Utica, editor from 1855 to 1885 of the

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[8] Philippe Pinel, *A Treatise on Insanity*, trans., D. D. Davis (Sheffield: Printed by W Todd, 1806), p. 12.

[9] *Ibid.*, p. 19.

[10] John Conolly, *An Inquiry Concerning the Indications of Insanity, with Suggestions for the Better Protection and Care of the Insane* (London: Printed for John Taylor, 1830), pp. 166-67.

[11] Richard Burton, *The Anatomy of Melancholy*, 11th ed., vol. I (London: J & E. Hobson, 1806), p. 140.

American Journal of Insanity, organ of the Association of Medical Superintendents, and, in his turn, the dominant voice by the latter date. The central theoretical issue between them centered on the problem of whether a given human action could be absolutely unpremeditated and therefore unpredictable, even to the actor. Ray said yes; Gray said no. And while it is true that in practical application their debate turned around legal procedures and court cases, they were aware that their argument went to a debate about nature itself. In saying yes, Ray introduced chance and ambiguity into his description of nature; and this, as I believe, became the central issue which divided them.

Ray's perception of the insane differed from Rush's in two important ways: first, the various symptoms seemed to him too random to be conveniently combined into diagnostic categories; second, and most particularly with regard to "moral insanity," he found that the inward, subjective life of the patient was at some vital point hidden from him.

Ray showed his sense of discouragement with diagnostic categories almost from the start. His *Treatise*, which he published at the age of thirty-one, is laced with doubts and ambivalencies. "It is not pretended," he wrote there, "that any classification can be rigorously correct; for such divisions have not been made by nature, and cannot be observed in practice." Then, in the same breath, he reversed himself: "The above arrangement [of classes], with the exception of some slight modifications, is that adopted by Esquirol, and has this advantage over some others, that it preserves the divisions made by nature."[12] Evidently he was being pulled one way by authority, another by personal experience. At another place he complained of the chaos of classifications and classificatory schemes used by the various asylums: "If there were any foundation in nature for all or any of these classes, their respective curability would be an interesting object of inquiry. . . . [But] they are not sufficiently well defined and understood to form the basis of a scientific classification. . . . The same case, at different periods, may present the aspect of melancholia, monomania, and dementia. To which of them is it then to be referred?"[13] Despite his frequent bows to authority, Ray found himself backing into the corner of nominalism: "The mental disorders are of course as numerous and various as the mental constitutions of the insane themselves; and to consider any particular association of them as characteristic of the state of mind called mania, would be only to blend things together that have no uniform nor necessary relations to one another. . . ."[14]

With the grouping together of symptoms of little apparent aid, Ray turned to different diagnostic criteria. His authority for this was the English phrenologist, Andrew Combe. I will quote at length from a defense of moral insanity that Ray made in 1861 in response to attacks by Gray, because the quote contains what seems to me the essence of Ray's position in contrast to both Rush and Gray. "The evidence of insanity in any form," he wrote, "is not always proved by the presence of any particular symptom, or even groups of symptoms, but rather by changes of mind or character, which can be explained on no other hypothesis than that of disease. In other words, the party must be compared with himself, not with any imaginary standard of sanity or insanity." And again: "In a large proportion of cases, as is well known, the crowning proof of insanity is drawn chiefly from the character of some single act, the previous and subsequent manifestations of disease being too obscure and equivocal to possess much significance. . . . So that if the act itself exhibit mental disturbances, if it be contrary to the characteristic feelings, habits and principles of a person, it furnishes a no less valid excuse than something which may have occurred days and weeks before."[15]

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[12] Ray, *Treatise*, p. 68.

[13] Isaac Ray, *Contributions to Mental Pathology* (Boston. Little, Brown and Co., 1873), p 94

[14] Ray, *Treatise*, p. 145

It seems permissible to draw several conclusions from these rather lengthy quotes: First, it would appear that classification by symptom was inadequate. Insanity, for Ray, was to be approached via the history of the individual concerned. Second, the new approach required empathy on the part of the investigator; that is, a thorough acquaintance with the patient's usual feelings, thoughts and character. Third, it is the *unpredictable* act which must be explained; when the unpredictable occurs the only hypothesis possible is that of disease. Since, in his above reply to Gray, Ray had particularly in mind the defense of moral insanity, one must conclude that for him the essential evidence of the malady lay in the unpredictable nature of the act in question. It is not to be inferred from this that Ray ever questioned the efficacy of science, nor that he ever doubted that the cause (diseased brain) was knowable. But, at a certain point the insane person's thought processes fall behind the veil — the point, that is, at which the person becomes insane. Moral insanity was, for Ray, in its essence, ambiguous, and in two ways: the unpredictability of the behavior, and the complete hiddenness of the mental processes.

In a separate essay, dating from the 1863, 1864 period, Ray made the same points in a different but related context — the heredity of disease. Here again is the bifurcation of inward processes and outward signs or symptoms, and again the element of the unpredictable. He argued for hereditary transmission, not of disease but of a taint, an organic defect. Accident (chance) enters the picture in two ways: the transmission of the taint, and its being triggered by environmental circumstance into disease. "Beyond the mere tendency to disease," he wrote, "all the rest is . . . a matter of accident. Not the necessities of constitution, but circumstances, determine whether the tendency remains in abeyance, or is converted into overt disease . . ." "In the first place," he continued, "like all accidental characters, [the taint] may die out with the individual himself, and leave no trace of its existence in his offspring."[16] Patently, Ray brought chance into the heart of nature.

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[15] Ray, *Contributions*, pp. 108, 116

Here again, he emphasized the hidden nature of the inward process — the taint — arguing that until triggered it remains "unobserved by the person's most intimate acquaintance." And, finally, he makes the point, and it appears to be his central point, that it is not the overt acts of behavior which are the signs of the brain disease called insanity, but the unexpected nature of the overt acts. By which signs, he asked, have we the right to infer the presence of the hereditary taint?: "A notion, ostensibly founded in fact, but really without any such foundation; an irresistible impulse to do or say a thing abhorent . . . a loss of self-control, if not consciousness, under extraordinary trial; the occasional ascendancy of appetite or passion over all the restraints of education, habit, and conscience; an act of violence, unprovoked by any adequate cause, and at variance with the character and disposition, coming like thunder from a cloudless sky . . ."[17] Insanity has, for Ray, become the point where chance intrudes itself, and nature becomes unpredictable.

The controversy which developed with increasing intensity up until the Civil War, and which did not thereafter languish until Ray's death in 1881, centered on the courtroom, and whether a given individual was insane or criminally culpable. This fact, as well as Ray's early interest in medical jurisprudence, tended to impose on the disputants a conceptual structure that had two effects: first, it concentrated Ray's attention on the issue of moral insanity to the point where it became the paradigm for his thoughts on insanity in general. Here in the courtroom was the loving mother who had inexplicably murdered her children; here the apparently motiveless crime; here the imperative impulse. Secondly, it structured Gray's response around the issue of moral insanity, thereby obscuring the fact that at issue was not just one category but the very nature of insanity.

The picture of John C. Gray that comes down to us is of a rather stern and commanding presence, who as asylum superintendent tended to be a keeper more than a healer, and, in modern vernacular, a law and order man. But it was law and order on two levels. He believed the courts to be important bastions standing against a rising incidence of social anarchy, and felt the doctrine of moral insanity would undermine the courts; power to preserve order. Closely tied to this, he was fighting for order on the perceptual level:

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[16] *Ibid* , p. 49.

[17] *Ibid.*, pp. 52, 53

acceptance of "moral insanity" would be to admit of ambiguity in the perception of the insane. So he steadfastly held to the ancient categories of Rush — mania, melancholia and dementia — in their pristine perceptual clarity, and rigidly excluded from his science not only moral insanity but the various derivatives of the unstable "melancholia." But, significantly, Gray did find himself adopting one of Ray's central doctrines — that insanity involves a change in habits and character. And this is significant because embodied in that doctrine as a potential never developed by Ray was the idea of insanity as a change, or even loss, of self.

For both men the nineteenth-century American civilization manifested a distressing disorder. In his first known work, a college composition, Ray complained that artificial society surrounds man with "numerous hosts" that attack his organs.[18] Much later in life Ray expounded at length on the problems caused by the increasing artificiality of American society in his *Mental Hygiene* (1863). It should be noted that Ray held to the notion, not uncommon in the age of Jefferson, of harmonious nature. There was, first, a harmony between the moral and intellectual faculties which enabled one both to know and do the right; there was further harmony between the intellect and natural environment as well as harmony between the moral sense or faculty and the community.[19] *Mental Hygiene* was a sustained description of the ways in which artificial society, in forcing men off the land and out of stable communities, was promoting the loss of social harmony through the imbalance of mental faculties, and particularly, the perversion of the "moral sense."[20]

John P. Gray was a different kind of conservative. He too, as he looked around him, saw an encroaching chaos, but he did not refer back to a time of natural harmony in a simpler past. In his view the passions belonged strictly to the body and were not to be sentimentalized as a "moral sense," or natural social sympathies. They were rather a piece with chaotic nature and to be controlled by habit and by the mind. When untrained passions overcome reason the result is not insanity but viciousness.[21] With him the mind-body dualism has become central: the body with its sensations and emotions has become something alien, part of the world — the threatening world — "out there."

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[18] Isaac Ray, "Remarks on Pathological Anatomy," in Quen, "Isaac Ray," 123

[19] Ray, *Treatise*, pp. 253, 251, 96, 228

[20] For Ray's identification of the "moral sense" with the "moral faculty" and affection, and his location of it in the mind, see his *Mental Hygiene* (Boston. Tichnor and Fields, 1863), pp 4-5, 62, 153, 305; the pervasive sense of alienation and longing for a simpler past is described in Marvin Meyer, *The Jacksonian Persuasion, Politics and Belief* (Stanford: Stanford University Press, 1957)

[21] John P. Gray, "Mental and Physical Characteristics of Pauperism," *Am J Insanity*, 1857, *13*: 309-320

Gray brought with him a harsh elitism: his doctrine of the sinfulness of the untutored masses. In describing four classes in society, he gave one over to the feebleminded, two to those who are depraved through lack of moral education, and one to those who, like himself, because of training and education have, as he inferred, the right to rule.[22] It is not difficult to see in Gray's thought a very definite parallel between the lower three classes and the body, the educated, self-controlled class and the mind.

Both Ray, the reformer, and Gray, the conservative, perceived an encroaching social chaos. Gray constantly returned to the theme. "Ours," he wrote, "is the age of the passions. . . ."[23] Again, "Violence against the person and against property is now so prevalent, that we should be extremely cautious of recognizing any doubtful form of insanity that will ever shield it."[24] A year later he exactly repeated that statement.[25] Where Ray talked of a rising incidence of insanity,[26] Gray talked of rising crime. For Gray the threat was that of unsocialized man attacking and destroying the institutions of society through criminal activity. The great danger, that is, was from nature — natural man. Nature itself was chaotic, and established society was the bulwark that stood against it.

So far as Gray was concerned the category "moral insanity" — i.e., derangement of the moral sense without concomitant derangement of the intellect — was but another name for depravity. One is insane if loss of control leading to violence is due to intellectual derangement. Without it, without a controlling delusion, the perpetrator of a crime is either immoral or weak. Gray asserted this proposition in 1858 and never changed his mind.[27]

But, just as Ray's longing to return to the simpler natural relations between men suggests an urge to reduce perceptual ambiguity, so Gray's conservatism, his nineteenth-century call for law and order, reveals a like anxiety which expressed itself in the fear of a rising under-class. One might conjecture that Gray was having problems of control over his own passions;[28] but I would like to trace out another line of conjecture by looking at it as a problem, again, of perceptual ambiguity. A closer look at Gray's argument against moral insanity is in order, but first it should be noted that not only did Gray defend the old unambiguous categories — melancholia, mania, dementia — against moral insanity but also against the other emerging categories, particularly that of monomania and its derivatives. So, in order to get Gray into perspective, a moment must be given over to a discussion of their emergence.

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[22] *Ibid* , 312

[23] John P Gray, "Hugh Miller his suicide," *Am. J. Insanity*, 1857, *13*· 334

[24] John P. Gray, "Homicide in insanity," *Am. J. Insanity*, 1857, *14*· 144

[25] John P Gray, "Moral insanity," *Am J. Insanity*, 1858, *14*· 314

[26] Ray, *Mental Hygiene*, p. 228

[27] Gray, "Moral Insanity," p. 314; see also Rosenberg, *Trial of Guiteau*, p 70.

[28] See, for example, the thesis developed by Winthrop Jordan in his *White Over Black ·American Attitudes toward the Negro, 1550 - 1812* (Chapel Hill· University of North Carolina Press, 1968).

The striking thing about the new categories, particularly in French psychiatry, was that they approximated moral insanity in ambiguity. One aspect of this was simply the great quantity of new terms, descending mainly from "melancholia" in stupifying profusion. The fact that categories tended to divide and propagate, as Rush had divided melancholia, reflects attempts to retain the relation between outward symptom and inward emotional and mental processes, but it also indicates that perceptual structures were disintegrating. We must, wrote Pinel's successor Esquirol, abandon melancholia: "The word melancholy, employed in the language of common life to express the habitual state of sadness from which some people suffer, should be left exclusively to moralists and poets."[29] He wished to substitute the word "monomania": "Monomania is essentially a disease of the sensibility. It reposes altogether in the affections, and its study is inseparable from a knowledge of the passions. Its set is in the heart of man. . . . How many are the cases of monomania, caused by thwarted love, by fear, vanity, wounded self-love, or disappointed ambition!" In Esquirol's thought the intellect and the heart tended to polarize. Mania handled the intellect, leaving the heart's passions to find a home less narrow in its connotations than melancholia. The new category, "monomania," was freighted with passions — "either gay or sad, exciting or depressing, and producing a fixed and permanent delirium, attended also by desires and determinations depending upon the character of the prevailing passion."[30] Melancholia proper became a sub-category of monomania with a new name, "lypemania," and the distinction of being pre-eminently the category of the heart, that is, of the social or moral sense.[31] This he passed on to his students to make sense of. Billod wrote in 1856 that lypemania can be the usual melancholia, or it can be characterized by gayety, irony, pride, anger, excitement, or by no emotion whatsoever.[32]

Monomania was being sub-classified into chaos in the attempt to maintain clarity — the attempt to group symptoms to conform with inward mental states. Outward melancholy, in the case of lypemania, could mask inward joy, and the like, *ad infinitum*. Jerome S. Bruner writes of the category: "[It is a] means by which objects of the world about us are identified. . . . When an event cannot be . . . categorized and identified, we experience terror in the face of the uncanny. And indeed, 'the uncanny' is itself a category, if only a residual one."[33] It seems possible that Esquirol's monomania, and more particularly his lypemania, had the aspect of this uncanny residual category. Melancholia-become-lypemania no longer carried with it a definite affect, or, to turn it around, affect was withdrawn from the observed person by the observer, who no longer intuitively knew how to feel towards the melancholic. The melancholic *seemed* (to the observer) to be turned in upon himself, his symptoms masking, instead of expressing, his emotions. Of him Esquirol wrote, he "fastens upon himself all his thoughts, all his affections; is egotistical, and lives *within* himself."[34]

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[29] E. Esquirol, *Mental Maladies, A Treatise on Insanity*, trans., E. K. Hunt (Philadelphia: Lea and Blanchard, 1845), p. 200.

[30] *Ibid.*, pp. 200, 202.

[31] *Ibid.*, p 209

[32] John P Gray, "Billod on the classification and semiology of various forms of lypemania," *Am. J. Insanity*, 1856, *13*: 183-191; here Gray pointed out in disgust that Guislain had designated twenty-three forms of monomania.

With the above remarks made, we can turn back to Gray and his reaction not only to moral insanity but to monomania and its derivatives, and suggest that his adherence to the old categories was in large part a perceptual strategy. His first signed article, "Homicide in Insanity" (1857), for example, was a sustained argument against moral insanity, and in it he expressed his fear of social chaos. But his *medical* argument there was strictly this: in his own experience of fifty-two cases of homicidal insanity each was first a clear case of insanity (mania, melancholia, dementia) with all the usual symptoms of those diseases, and only secondly a case of homicide. In each case the homicide, he said, was *predictable* in terms of other knowledge about the individual. He criticized Pinel for suggesting that cases of blind impulse to violence without any assignable cause can be considered insanity.[35] Such an argument (as Pinel's), Gray asserted in another context, leads directly to a belief in materialism; there must be a cause, and that cause is the individual's free choice.[36]

Again, in his 1858 article, "Moral Insanity," Gray pursued his subject. There he said of Esquirol's "impulsive homicidal mania" that an "accurate knowledge of antecedent facts" would necessarily detect an assignable cause, and throw each particular case either into the class of mania or into the class of "evil habitudes." And, "The disease however, is not to be *inferred* from the act, but the act must be shown to be the *result* of the disease."[37] He returned to his theme again when reviewing Buckle's *History of Civilization in*

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[33] Jerome S. Bruner, *et al.*, *A Study in Thinking* (New York: John Wiley and Sons, 1956), pp 12-13

[34] Esquirol, *Mental Maladies*, p. 320.

[35] Gray, "Homicide in insanity," 119-145.

[36] John P. Gray, "Bertrand on suicide," *Am. J. Insanity*, 1857, *14*: 209.

[37] Gray, "Moral insanity," 315, 319.

England. "Every step of progress in science," he wrote in praise of Buckle, "adds to the growing conviction in the minds of scientific men that mental and social phenomena rest upon the great principles of causation corresponding to the known laws of the physical world."[38] So, Ray was going to the heart of the matter in his 1861 reply to Gray's attacks: "*Their* idea is that we are bound first to prove the existence of the disease, and then — and not before — we may be warranted in attributing it to a criminal act that might have been the offspring of moral depravity."[39] Ray went on to reiterate his thesis that an act without apparent cause is evidence of insanity. Without perhaps realizing it, the psychiatrists had come to the crossroads of modern science — determinism vs. indeterminism — and Gray, despite all his inclinations to the contrary, was being forced into the position of mechanistic determinism. The irony of Gray's intellectual career was capped in 1872 when fellow asylum superintendent H. B. Wilbur took the self-proclaimed champion of free-will to task for his materialism. Gray, he wrote, "has attempted to ride two horses at the same time, viz., a belief in the existence of mind distinct from body, and yet that insanity invariably depends upon bodily disease. . . ."[40]

In volume fourteen of the *American Journal of Insanity*, Gray reprinted in four parts an article by J. C. Bucknill, "The Pathology of Insanity," in which the English psychiatrist came out strongly for an organic functionalist interpretation of the mental processes. Pointing particularly to Paget's work on pathology, Bucknill asserted the identify of mind and cerebral functions. Gray not only gave the Bucknill work his blessing,[41] he thereafter made Bucknill one of his most quoted authorities. Gray took to referring to faculty psychology (his first intellectual home) as "metaphysical" speculation, and argued that pathology was the *only* path to knowledge of the mind.[42] Correlatively, insanity for Gray consisted solely of organic disease and its symptoms; he dismissed the categories "monomania" and "moral insanity" as empty because psychological,[43] perhaps forgetting that a few years back he had attacked these categories (and Ray) for their materialistic implications. Now, in 1868, he was arguing that they were from out of the pre-scientific past. Still, he himself clung to mania, melancholia and dementia.

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[38] John P Gray, "Bibliographical," *Am. J Insanity*, 1858, *15*: 235; Gray goes on in this generally favorable review to reproach Buckle for denying the efficacy of the will.

[39] Isaac Ray, "Dr. Ray on moral insanity," *Am J. Insanity*, 1861, *18*: 127.

[40] H. B Wilbur, "Materialism in its relation to the causes, conditions, and treatment of insanity," *J. Psych Med.*, 1872, *6*. 48.

[41] See particularly, J C. Bucknill, "The pathology of insanity (Part 2)," *Am. J. Insanity*, 1857, *14* 172-193; and, Gray's "Bibliographical," *Am J. Insanity*, 1858, *15*: 227-233; Gray did not care for Daniel H. Tuke's contribution to the book from which the articles were taken, Bucknill and Tuke, *A Manual of Pathological Medicine* (London: John Churchill, 1852).

[42] John P. Gray, "Insanity, and its relation to medicine," *Am. J Insanity*, 1865, *21*: 146.

[43] John P Gray, "Bibliographical," *Am. J Insanity*, 1868, *24* 356

In his pursuit of predictability Gray had boxed himself into a serious contradiction, a contradiction strikingly in evidence when, as quoted above in his Bucknill article, he put "mental phenomena" into the physical realm by subjecting them to the laws of the physical world, but continued to hold the position that the mind is immortal and not subject to disease.[44] He attempted to rescue himself by bringing into psychiatry a new concept of the mind as "self,"[45] only to find himself in another, equally difficult, box.

Sometime in 1858 a certain "Miss C." asked to be committed to the Utica asylum. An unmarried and lonely woman of twenty-five, Miss C. had been supporting her family by needlework. In 1851 she turned to Spiritualism, began hearing rappings and voices, and subsequently became a part-time practitioner. Her voices became real and indwelling, began, in fact, demanding that she harm herself and her family. She finally committed herself as a precaution against doing violence. Most of the time, even up to and just after the crisis periods, she knew that the voices were not her; that they were delusional. Gray drew from this the conclusion that though "the noblest results of the reason and imagination must be considered the products of a natural organ . . . the will, the conscious *ego*, remains independent of the organ, in its existence." He concluded, further, that insanity comes not with mere delusion — if it did monomania would be insanity, and much of mankind, certainly all of the Spiritualists, should be considered insane. Insanity is something more. It involves the loss of the conscious ego.[46]

The idea of insanity as loss of the conscious ego, or self, was new to psychiatric literature. It is true that in England the conscious ego concept was important to physiologist William B. Carpenter, and since he was well known to Gray it is quite possible that the American got the concept from him and the Scottish Common Sense tradition of philosophy to which he belonged. But Carpenter did not think of insanity as loss of self. For him it involved the loss of will, or control over one's behavior, only; in fact, he argued strongly for both moral insanity and monomania, virtually using the latter as his paradigm of insanity.[47]

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[44] Gray, "Insanity," 170.

[45] Griesinger, whom Gray admired, had a concept of the mind which equated it with the self, but his concept, which equated the self with a core group of ideas, was not Gray's.

[46] John P Gray, "Case of mania with the delusions and phenomena of spiritualism," *Am J Insanity*, 1860, *16*: 321-338.

[47] William B. Carpenter, *Principles of Mental Physiology* (New York: D Appleton and Co., 1874), pp. 657-75; also: "The degree in which the operations of the *Mind* itself are *dependent* upon its material instrument . . . The doctrine usually regarded as having the best Scriptural basis, — that the mind has an

Gray's use of the concept was new and rather bold, and can be at least partly explained by his need to break out of the contradiction mentioned above. I suspect also that the "conscious ego" was subjectively real for Gray. The "conscious ego" puts the passions "out there" with the rest of the chaotic world; it puts one's own behavior and sensations likewise "out there," away from the most intimate self. It pits the behavioral self ("out there") against an inner essential self or conscious ego ("in here") which is nothing more than pure reflectivity. The mind becomes this pure reflexivity, while the mental functions are free to become mere operations of the organism: "The reference to an external, spiritual agency of all the extraordinary sensations and perceptions, which she [Miss C.] was conscious of not being able to control, was not more constant or distinct to her, or more manifest to an observer, than a belief in a separateness of her proper self from all these mental phenomena. The latter is the delusion of the whole human race."[48]

Gray was soon converted to Ray's argument that insanity is a departure from one's normal behavior. As the celebrated psychiatric expert at the trial of Guiteau, assassinator of Garfield, Gray gave as his definition of insanity: "Insanity is a disease of the brain, in which there is an association of mental disturbance, a change in the individual, a departure from himself, from his own ordinary standard of mental action, a change in his way of feeling and thinking and acting."[49] At that trial it became obvious that an orthodoxy of opinion had been established among a large group of the asylum superintendents, who to a man echoed Gray. Each held to the old categories, mania, melancholia, and dementia, with the one new exception, general paresis, and each agreed with Gray that loss of self-control is the essential symptom of insanity. They agreed that Guiteau had neither changed in character nor had lost self-control.[50] As in Miss C's case, Guiteau's delusion (if it was that) had not obliterated his conscious ego.

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existence altogether distinct from that of the body,—is attended with several difficulties, of which those arising out of the phenomena of Insanity are perhaps the most important. On the other hand, the opinion held by some, that mental phenomena are the mere results of material changes, appear to involve difficulties at least equal; amongst which may be noticed the consciousness of personal identity, preserved throughout the continual and rapid changes to which the Nervous structure is subject." Carpenter, *Principles of Human Physiology* (Philadelphia· Lea and Blanchard, 1843), p. 74.

[48] Gray, "Case of Mania," 338.

[49] *Report of the Proceedings in the Case of the United States vs Charles J. Guiteau Tried in the Supreme Court of the District of Columbia, Holding a Criminal Term and Beginning November 14, 1881*, Part II. H. H. Alexander and Edward D. Easton, Official Stenographers (Washington· Government Printing Office, 1882), p. 1593.

[50] *Ibid.*, pp. 1019, 1339, 1359, 1395, 1565, 1574-75.

The doctrine of the conscious ego (insanity as the loss of self) solved Gray's religious and legal problem of explaining how there can be free will when one starts from mechanistic assumptions. The conscious ego stands above those organic functions of the brain that we call mental. The insane person has become mechanical. But this approach only raised new problems. His January 1868 review of Henry Maudsley's *The Physiology and Pathology of Mind* shows the corner he boxed himself into. Maudsley advanced both an organic functionalist theory of the mental processes and a nosology that included both "ordinary melancholia" (lypemania) and "monomania" in a new category, "partial ideational insanity." Gray showed his approval of the functionalism in the following way: "But whether as a fact or an hypothesis, mind must be considered to be the function of the brain, and the duty of the scientist is to determine the conditions of this cerebral activity." But he qualified this by adding that Maudsley was wrong to believe that the whole story can be told in terms of physiology alone; it must also be told from the side of consciousness. "The material and the spiritual," he wrote, "the natural and the supernatural, theories of mind must both be recognized as valid within the limits of our finite knowledge."[51] Leaving the matter on that ambiguous note, he turned to Maudsley's category "partial ideational insanity" and objected to it because it departed from the purely physiological approach! Completely reversing his argument of ten years previously when he had taken Ray's organic functional defense of approximately this same category to task, Gray now wrote: ". . . he discards a natural and physiological basis, already pointed out to him, for an artificial and psychological one. . . ."[52] Gray's rejection of inward (and ambiguously hidden) psychological states had driven him to take up a thoroughgoing mechanistic position. He hung on to the "conscious ego" only by means of a frank appeal to metaphysics and some very murky logic.[53]

Gray's position would be rather abstract and dispassionate were it not for one fact: in the "sane" lower classes he saw the same lack of self-control that he ascribed to insanity. For analytical and courtroom purposes the lower orders have free will and are classed as sane. But they could not exercise that free will. They lacked the necessary moral training. So here Gray's careful distinction between insanity and mere viciousness breaks down. The masses do not have diseased brains, neither have they self-control, nor, one supposes, selves. Analytically Gray distinguished between the insane and the vicious; emotionally, he did not.

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[51] Gray, "Bibliographical," *Am. J. Insanity*, 1868, *24*: 338, 342.

[52] *Ibid.*, pp. 355, 356-357.

[53] See Gray's review of Ray's *Mental Hygiene* for a full statement both of his allegations of Ray's materialism and the need to accept a metaphysical position on free will as well as a scientific determinism that denies free will. "Bibliographical," *Am. J Insanity*, 1864, *20*: 338-350.

These things lead me to believe that Gray suffered from an anxiety that can be described as "existential." He apparently found ambiguity to be intolerable. He argued mechanistic determinism to avoid the unpredictable, and he argued the conscious ego to avoid the implications of mechanistic determinism. He fought ambiguity by clinging to the old categories, but in doing so robbed them of their affect; for, in place of an inner sadness, inner elation, or the like, Gray was forced to see only inner organic disease. Or rather, as Bruner's analysis of categories suggests, probably even here in the old categories Gray could not avoid replacing the old affects with a new one — anxiety, or a sense of the uncanny. It is most significant that he could not differentiate between "conscious ego" and "will" (a distinction Carpenter carefully made), between self and self-control. For Gray it was the self that was under attack. And his doctrine of the conscious ego, far from putting the mind or self in the safe realm of the spiritual and immortal, as was his stated intention, put it in jeopardy of oblivion from organic disease. In perceiving the insane as automatons without selves, he was also placing them into the same perceptual context with the seething, chaotic masses. The implication, I believe, is that from Gray's perceptual vantage point the world, including the insane, was tending towards ambiguity, and the concomitant withdrawal of affect had distressing repercussions on his own sense of self.

VOLUNTARISM ON TRIAL: ST. LOUIS' RESPONSE TO THE CHOLERA EPIDEMIC OF 1849*

PAUL W. BREWER

When St. Louisans opened the *Missouri Republican* on January 1, 1849, they could not help noting the paper's concern over the possible spread of cholera upriver from New Orleans, where the disease was then raging.[1] But few, if any — including the editors of the *Republican* — envisioned the devastating impact the disease would have on the community during June and July. In those two months cholera claimed as many as 145 victims per day and in all at least 4,557 (or about 7%) of the city's inhabitants.[2]

The response of St. Louisans and their city to the cholera epidemic of 1849 offers a brief but incisive picture of the workings of society in the mid-nineteenth century. The community had long since ceased to be the remote outpost that it had been in 1830 with some 5,000 inhabitants huddled along the west bank of the Mississippi. By 1849, St. Louis' population had increased over twelve-fold to 63,471,[3] and the city stood at the center of the thriving commercial trade in the Mississippi Valley. In another two decades the population would almost quadruple. The fantastic growth that the city was experiencing brought with it many of the problems of health and sanitation with which a modern urban community must contend. The cholera epidemic of 1849 brought these problems into clear focus. The response of St. Louisans to the epidemic can be seen in part as the response of a voluntaristic society to its pressing needs as an emerging urban community. In the short run the epidemic led to severe loss of life and disruption of commerce. In the long run the epidemic forced St. Louisans to reconsider their voluntaristic approach and move, if somewhat hesitantly, toward the adoption of public health measures.

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* The author wishes to thank for their help in making this article possible Rowland Berthoff, Glen E Holt, Max I. Reichard, and Howard N Rabinowitz

[1] *Missouri Republican*, January 1, 1849

[2] William M McPheeters, M D., "The Cholera Epidemics," *One Hundred Years of Medicine and Surgery in Missouri* (St. Louis, 1900), 68, and Sister M Lilliana Owens, *The St Louis Hospital 1828* (St. Louis, 1965), 24. See also Robert Moore, "Cholera Epidemic in St. Louis in 1866," *One Hundred Years of Medicine*, 81. There was no official death count during the St. Louis cholera epidemic of 1849. All mortality figures used in this paper come from McPheeters' tables and citations. Both he and Sister Owens based their count on actual cemetery records for St Louis during this period. The death figures recorded in the *Missouri Republican*, especially those during the height of the epidemic in June and July, follow very closely to the numbers McPheeters gave when he broke down the totals on a weekly and daily basis. It was not possible to compare exactly the figures given by McPheeters and those by the newspaper, because the *Republican* did not always bother to carry totals and at times admittedly printed incomplete figures. All death totals used in this paper represent the minimum value that can be ascribed to the figures Contemporaries, as well as scholars like McPheeters, noted that not all the cholera deaths were recorded during the epidemic. For contemporary statements to this effect, see the Diary and Journal of N. D. Allen, May 17, 1849; Diary of Edward Bates, July 5, 1849, Bates Papers; Micajah Tarver to Solomon S. Sublette, August 31, 1849, Sublette Papers, Missouri Historical Society (hereafter all letter and diary citations can be assumed to be from the Society unless otherwise noted)

[3] This figure is based on a census conducted in 1849 by the city. Cited in the *Missouri Republican*, February 5, 1849

St. Louis was in the middle of a long winter in late 1848 when news came that immigrants from Europe were bringing with them the cholera that had been raging in Le Havre and other Old World cities. New Orleans was one of the first places to feel the effect of this influx; by December of 1848, cholera prevailed in epidemic proportions.[4] By January, the *Missouri Republican* predicted that it was only a matter of time before steamboats would bring cholera-stricken passengers up-river from New Orleans. The paper urged officials to take preventive steps before the disease invaded the city.[5] Some St. Louisans, fearful of what might happen, spoke of fleeing the city in early January before a single case of cholera had been reported.[6] Most, however, including the authorities, preferred to wait and see what would develop.

That some St. Louisans considered fleeing the city at this early date is not altogether surprising. Cholera was not new to the city in 1849. St. Louis had been one of many areas to suffer in 1832 from the first of the three devastating waves of cholera that would sweep over the nation in the nineteenth century. Few St. Louisans who had survived the attack in 1832 could forget the miseries the city had experienced. Although the death rate had rarely exceeded twenty per day, the city had lost almost 10% of its inhabitants to the disease.[7] And now the city (and the nation as a whole) was about to experience the second and more devastating scourge of cholera.[8]

The disease itself was enough to strike fear in the hearts of most. Contemporaries were not aware that cholera was caused by a microorganism that attacked the small intestine, but they clearly understood that its onset was marked by debilitating diarrhea, painful cramps and possible vomiting. The resulting dehydration led to death in one-third to one-half of the cases,[9] most often within a day and sometimes within a few hours. Loved ones who had shown no signs of illness that morning would be buried before nightfall, and friends who had parted company that evening in fine spirits would be dead before morning.[10]

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[4] *Ibid.*, January 1, 1849

[5] *Ibid.*, January 1, 3, 21 and 24, 1849

[6] Ferdy [Ferguson] to [John F. Ferguson], January 2, 1849, Ferguson Papers.

[7] *Missouri Republican*, June 12, 1849; Robert Moore, "Notes Upon the History of Cholera in St Louis," *A Sanitary Survey of St Louis* (Concord, 1885), 41.

[8] Charles E Rosenberg, *The Cholera Years The United States in 1832, 1849 and 1866* (Chicago, 1962), 1, 4, *passim*. The author and other scholars are indebted to Professor Rosenberg for his excellent treatment of the major cholera epidemics in 19th-century America Rosenberg's study effectively demonstrates that epidemics are primarily significant for what they say about the society in which they took

During the early months of 1849, St. Louisans appeared to have reason to believe the city might be spared. Several boatloads of people, mainly foreigners, arrived from New Orleans, and as yet there was no cause for alarm. The deaths from cholera numbered only thirty-six in January and twenty-one in February, and were largely confined to the new arrivals who had contracted the disease before entering the city. In an effort to keep spirits high and reassure businessmen, the *Missouri Republican* declared flatly on February 3 that "there is no cholera in this city."[11]

St. Louis, however, was not to be spared. The seasonal lull in river traffic and the temporary disruption of commerce in New Orleans because of its epidemic had merely postponed the biggest part of the influx of immigrants. By May it was not unusual for as many as 1200 foreigners to arrive by boat from New Orleans in a three or four day period.[12] Furthermore, many native Americans infected with the "gold fever" that gripped the nation in 1849 passed through St. Louis before moving westward.[13] By late June and early July, at the height of the cholera epidemic, as many as 2,500 new arrivals were expected within a three-day period.[14] The *Missouri Republican* estimated in late June that roughly one-third of the city's inhabitants were immigrants.[15]

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place. Moreover, his treatment is valuable for placing cholera in its proper national and international context, and does much to support his argument that "cholera was the classic epidemic disease of the nineteenth century, as plague had been of the fourteenth." Rosenberg's account is a national one, though it dwells on the impact of cholera in New York.

As a result, his study is admittedly limited in its treatment of St. Louis and other western communities. Because the present study employed means not available to Rosenberg, marginal differences arise as to the nature and impact of the 1849 epidemic in St. Louis. Rarely though are these differences major ones For the most part, the St. Louis story supports the national trends depicted by Rosenberg.

[9] This figure is a rough estimate made after a survey of contemporary comments on the progress of cholera. Sister Owens' data based on hospital records in St. Louis in 1849 shows mortality in about 42% of the cholera cases admitted. Sister Owens, "City Hospital," 25.

[10] For details of such cases, see Francis Sublette to Solomon P. Sublette, May 13 [1849], Sublette Papers; E. G. Simons to Simeon Simons, May 9, 1849, St. Louis History Collection

[11] *Missouri Republican*, February 3, 1849.

[12] *Ibid.*, April 10, May 14 and 31, 1849.

[13] *Ibid.*, April 10 and 30, 1849, E. G. Simons to Simeon Simons, May 9, 1849, St. Louis History Collection.

[14] *Missouri Republican*, July 5, 1849.

[15] Contemporaries used the term "emigrants" to include all foreigners. The paper's estimate that one-third

St. Louis was already experiencing the problems of overcrowding because of its previous growth. The city was ill prepared to house or care for the strangers pouring in at such a prodigious rate; the immigrants, most of them with little or no money, had no place to go but into the slums along the river front, thus adding to the already unhealthy conditions.

Along with the influx of people came warmer weather and heavy rains,[16] which created a more suitable climate for epidemic cholera. Stagnant ponds, cellars a foot deep in water, alleys piled high with garbage, unpaved streets and overcrowding were conditions that St. Louisans seemed to accept as facts of life.[17] As one report noted, three-fourths of the city was never visited by a slop cart, the forerunner of the modern garbage truck. Moreover, the entire community suffered from an inadequate water supply, the lack of drainage facilities and the complete absence of any sewerage system.[18]

Knowledgeable St. Louisans clearly recognized that there was a high correlation between cholera and filthy conditions. Early in the year the *Missouri Republican* repeatedly urged the authorities and the public alike to clean up the wretched conditions that prevailed in order to prevent cholera from gaining a foothold.[19] In the spring and early summer almost everyone denounced the filth and stench found in many parts of the city.[20] No one, however, understood that cholera was spread primarily through the contamination of drinking water by the waste products of cholera victims. Thus, most of the proposals for cleaning up the streets and improving the general conditions in the city, however well-intended, could not offset the city's desperate need for adequate sewerage, water and drainage systems. Wanting in these three critical areas, beset by overcrowding and filthy conditions, and faced with an enormous influx of emigrants, St. Louis was primed for disaster.

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of the population was non-native is in line with George Joseph McHugh's listing for 1850 of some 22,340 German-born and 9,719 Irish-born residents in a population of 77,861 See *ibid.*, June 30, 1849, George Joseph McHugh, "Political Nativism in St Louis 1840-1857" (unpublished M A. Thesis, St Louis University, 1939), 51

[16] Francis Sublette to Solomon P Sublette, March 10, 1849, Sublette Papers, [S. Pollak, M. D], *The Autobiography and Reminiscences of S Pollak, M D* (St Louis, 1904), entry for July 6, 1849; Diary of Edward Bates, April-July, 1849, *passim.* Bates Papers; McPheeters, "The Cholera Epidemic," *One Hundred Years of Medicine*, 76

[17] *Missouri Republican*, January 9, August 3, 1849, Francis Sublette to Solomon P. Sublette, March 10, May 21, 1849, Sublette Papers; William H Belcher to Nathan Belcher, May 21, 1849, Belcher Family Papers; Proceedings of the Committee of Public Health, June-August, 1849, *passim.*

[18] Report by the Committee of Public Health as recorded by the *Missouri Republican*, August 3, 1849; Robert Moore, "Notes Upon Cholera," *A Sanitary Survey of St Louis*, 46. Moore notes that a number of areas in the city still relied upon (public) wells for their drinking water

[19] *Missouri Republican*, January 1, 3, 21, 24, 1849.

[20] See footnote 17.

Not surprisingly, the death toll from cholera began to increase in the spring of 1849. In March, sixty-eight St. Louisans died from the disease, and in April, another 131 followed them to their graves. In May, the number of victims soared to 517. The problem by then had ceased to be exclusively the plight of the emigrant sick; St. Louisans began to account for the bulk of the statistics.[21]

During April the *Missouri Republican* continued to play down the problems in an effort to calm the public and to dispel "all the silly reports" about the illness that were curtailing business activities.[22] In its editorials, columns, and advertising, however, the paper gave increasing attention to the subject of cholera. By May 11, the paper began sporadically to print daily death figures.[23]

Friends begged St. Louisans to abandon the city and join them in the healthy countryside.[24] One man informed a business acquaintance, "I can only say I am alive, and thank God for it . . . ," as he wrote out his will.[25] Another St. Louisan declared, somewhat exaggeratedly, that conditions had become so bad that "nothing [is] to be seen but one funeral after another — [hearses], often on a trot out and full, drive back to go to another."[26]

Already society was feeling the impact of cholera. By the end of April, the "Orphans Home" near Third and Cerre had been forced to close when the matron and four of the children succumbed to the disease.[27] On May 10, the circuit court adjourned for three weeks because of the "great difficulty experienced in obtaining the attendance of jurors and witnesses."[28] Business activity soon came to a standstill. As early as mid-April some people recognized the problems "Western Merchants" would have paying their eastern creditors if cholera disrupted trade.[29] By May, people were reporting that "business of every kind is nearly suspended."[30]

Women were particularly distraught by the death and sickness around them. St. Louis, a newly emerging western community, one step removed from the frontier, beset by urban conditions and reeling under the impact of cholera, offered little consolation to Francis Sublette, a bride of less than a year. Carrying on alone while her husband was away on business, she came to know the horror of death. Lamenting the loss of her closest friend in a letter to her husband, she poured out her feelings: "I never was so unnerved in my life . . . . I cannot tell who will be the next-one to go . . . . I am so nervous that I imagine I am sick very often, when there is but little cause for it."[31] Many women of lesser courage than young Mrs. Sublette shared her anxieties. As one contemporary noted, ". . . imagination has a bad effect and a woman of weak nerves being with [one] who died was almost sure to have a violent diarrhea if not cholera often from fear alone."[32]

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[21] McPheeters, "The Cholera Epidemics," *One Hundred Years of Medicine*, 65.

[22] *Missouri Republican*, April 4, 1849.

[23] *Ibid.*, May 11, 1849

[24] Ann W White to Mrs. Julia Kennett, April 14, 1849, Kennett Family Papers; Francis Sublette to Solomon Sublette, May 13, 1849, Sublette Papers; I. H. Headlee to Samuel H. Headlee, June 13, 1849, Headlee Papers; Edward Bates to R B. Frayser, [June, 1849], Bates Papers.

[25] E. G. Simons to Simeon Simons, May 9, 1849, St Louis History Collection

[26] Diary & Journal of N. D Allen, May 17, 1849

[27] *Missouri Republican*, April 30, 1849.

[28] *Ibid*, May 10, 1849

[29] E. G Simons to Simeon Simons, April 15, 1849, St Louis History Collection

[30] Francis Sublette to Solomon Sublette, May 13, 1849, Sublette Papers See also J. M. Douglass to Francis D Douglas, May 16, 1849, Missouri History Collection

Many, like Francis Sublette, wanted to leave St. Louis, but did not know where to go. Reports continued to emphasize that cholera prevailed throughout the entire Mississippi Valley and the nation as a whole.[33] Louisville, Cincinnati, Chicago, Milwaukee, Memphis and New Orleans, as well as Boston, New York, Philadelphia, Richmond and San Francisco, felt the impact of cholera in varying degrees. Nor were smaller communities or rural areas necessarily any safer; Sanduskie, Cairo, Independence, Kansas City and large areas of Missouri suffered the effects of cholera.[34] If anything, it was the western communities that suffered the most.[35]

As cholera approached epidemic proportions in May, St. Louis' problems were compounded. In the early morning hours of the seventeenth, a fire broke out on the river front and spread rapidly through a major portion of the business district. Some St. Louisans apparently viewed the fire as a blessing in disguise, because they believed it contributed to the decline in cholera fatalities in the third and fourth weeks of May.[36] They were probably correct. By the end of the month, however, the disease had clearly regained its "lost ground" as the mortality began to soar.

When the crisis reached full-blown epidemic proportions in June and July, no class or economic group was safe from cholera. Nor was any section of the city entirely free from the disease. To some it seemed that cholera had carried off many of St. Louis' leading citizens.[37] These reports, however, appear out of proportion to the number of ranking citizens who succumbed to the disease. Some such people, nevertheless, were among the victims. Many of the leading citizens who might have been financially able to leave the city elected to stay to do what they could. As an influential businessman and politician like Edward Bates wrote, "I dare not go. I am one of the oldest of the American inhabitants, have a good share of public respect and confidence, and consequently, some influence with the people. I hold it to be a sacred duty, that admits of no compromise to stand my ground the ready to do and take my part in whatever the exigencies of the time may require."[38] Not all such men could expect to survive the epidemic.

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[31] Francis Sublette to Solomon Sublette, May 13, 1849, Sublette Papers

[32] Diary & Journal of N D. Allen, May 17, 1849

[33] *Missouri Republican*, April-July, 1849, *passim*

[34] *Ibid.*, Rosenberg, *The Cholera Years*, 101-120, J S Chambers, M D , *The Conquest of Cholera* (New York, 1938), 212-252.

[35] *Ibid* Exact death figures are difficult to obtain for each area hit by cholera In New York, some 5017 citizens are known to have gone to their graves because of the disease. Other communities may not have lost as many to cholera, but on a percentage basis they probably suffered even more than New York. Rosenberg noted, "it was in the infant cities of the West . that the disease was most severe. St Louis lost a tenth of her population, Cincinnati suffered about as severely, Sanduskie even more severely than St Louis " Rosenberg, *The Cholera Years*, 115

[36] Francis Sublette to Solomon Sublette, May 21, June 2, 1849, Sublette Papers; McPheeters, "The Cholera

The people who suffered the most during the epidemic were those who, in most cases, were least able to care for themselves: the poor, the slum dweller and above all the foreign born. Although the death total can safely be said to have exceeded 4,500, a detailed breakdown of the figures by wards or ethnic groups is virtually impossible to determine. Reliable contemporary sources, however, estimated that three-fourths of the victims were of foreign extraction, mainly Germans and Irishmen.[39]

The areas of St. Louis hit hardest by cholera were those where overcrowding existed, where streets went unpaved and where filth and dampness prevailed.[40] Far fewer cases occurred in the cleaner, better-to-do areas, especially those in which the people did not rely on wells for their drinking water.[41] Generally speaking, the parts of St. Louis hit hardest by cholera were those in the south, southwest, north and northwest. These areas roughly comprised the First, Fifth and Sixth Wards, the sections that apparently contained the highest percentage of Germans and Irishmen.[42] Easily the unhealthiest place in the city was a three-block area in the southwest part of

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Epidemics," *One Hundred Years of Medicine*, 65-66 Many businessmen also saw the fire as a golden opportunity to force the community to rebuild the burned-out business and wharf facilities with ones that would accommodate the expansion of trade in the years to come. See *Missouri Republican*, June 17, 1849.

[37] William S. Hereford to Major Solomon P. Sublette, July 4, 1849, Sublette Papers.

[38] Edward Bates to R B Frayser, [June, 1849], Bates Papers.

[39] *Missouri Republican*, June 30, 1849; Proceedings of the Committee of Public Health, July 2, 1849.

[40] *Missouri Republican*, June 13, 19 and 30, 1849; Proceedings of the Committee of Public Health, July 2, 1849, McPheeters, "The Cholera Epidemics," *One Hundred Years of Medicine*, 71-72.

[41] Moore, "Notes Upon Cholera," *A Sanitary Survey of St Louis*, 46; Rosenberg, *The Cholera Years*, 115; McPheeters, "The Cholera Epidemics," *One Hundred Years of Medicine*, 72.

[42] This equation to the First, Fifth and Sixth wards is a tentative one. These were the wards that roughly corresponded to the enumerated areas Moreover, these wards had the highest percentage of people with lower job status. One would suspect that these wards accordingly contained a large number of the impoverished areas in which cholera took its greatest toll. For information on the location of immigrants within the city and their job

St. Louis that became known as "Shepard's Grave Yard." In this low, damp, utterly filthy terrain on the site of Chouteau's Pond, reportedly sixty-eight, or two-thirds, of the inhabitants had died — twenty-one in one house — by the third of July.[43]

II

To whom did the average St. Louisan turn for help during the epidemic? As previously noted, a number of segments of society broke down or ceased to function during the crisis: businesses shut down, orphanages closed, courts recessed and schools adjourned. Three key groups in the society — the medical profession, the church and local government — were seemingly in the best position to relieve the suffering. It was the response of these agencies and, more importantly, the response of St. Louisans to them that most clearly revealed the voluntaristic character of the society. For it was through these three bodies that society scored its greatest successes and failures in dealing with the epidemic.

The medical profession was perhaps the one agency in society which might have been able to do the most for the sick. Yet it proved least capable of combating cholera. St. Louis physicians labored courageously among the sick and the dying at great risk to their own health. For the most part, however, they were helpless to stem the disease because of the limited state of medical knowledge in the mid-nineteenth century.

Like their colleagues elsewhere, St. Louis physicians initially were confident cholera could be cured, providing that the disease was detected and treated in its early stages. Moreover, like others, they recognized an association between cholera and unsanitary conditions. Beyond this, however, the doctors knew little of the causes or the cures of the disease.[44] They were unaware that cholera was caused by a microorganism that attacked the small intestine, for it was not until 1883 that Robert Koch isolated the organism causing cholera. Not surprisingly, then, in 1849 some doctors suspected that cholera was caused by a "poison" acting on the nervous system that in turn triggered the bowels, while others subscribed to the popular notion of a relationship between atmospheric conditions and the disease.[45] In most cases

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status, see George R. Shockey, Jr , "Immigrants in St Louis — 1850" (Unpublished Senior Honors Thesis, Washington University, 1969)

[43] Proceedings of the Committee of Public Health, July 3 and 4, 1949, McPheeters, "The Cholera Epidemics," *One Hundred Years of Medicine*, 72

[44] Doctors were not actually at fault for failing to find a "cure" for cholera. The disease is not cured; rather its victims either survive or die Even today the basic treatment for cholera involves means to restore the patient's loss of fluids.

[45] For the limited state of knowledge about the nature of cholera in 1849, see Rosenberg, *The Cholera Years*,

such as these, physicians confined themselves to speculation or, at best, conjecture based upon their observations, rather than engaging in any scientific research.

More often than not, however, St. Louis physicians did not concern themselves with the causes of cholera or its transference as much as they did with its treatment. Most contented themselves with describing in great detail both the symptoms of the disease and the specifics they prescribed. Some admitted that "we know of no specific for cholera," and recommended nothing more than the "general principles of sound medical practice": take a warm bath at least once a week; avoid fatigue, exposure in cold, damp weather, and all unaccustomed stimulants; forego fish and certain vegetables; and avoid public gatherings at night.[46] Thus, lacking sound knowledge of the pathology of cholera, the doctors, however earnest in their intentions, were at a loss to stem the disease. In the end most had to agree that cholera was an "outlaw" beyond their capture.[47]

The medical profession, however, tried to do whatever it could. In January of 1849, when the threat of cholera was first mentioned, area doctors began meeting to discuss methods of treatment and to revive the local chapter of the Missouri Medical Society, which had gone into decline since its incorporation in 1837. The ensuing discussions of the Society proved to be largely academic rather than of any lasting consequence. As one doctor noted later, the most vaunted remedies of the day proved worthless. When their favorite treatments such as calomel, a mercurial compound, failed them, the doctors were forced to turn to experimentation. Some sought to supplement calomel with mustard packs, baths or even bleeding; others administered morphine and opium in an effort to stem the diarrhea; and still others placed beeswax or corks in the anus out of sheer desperation.[48]

Some St. Louisans became cynical toward the medical profession when it failed to stem the epidemic. One citizen, though later qualifying his remarks, charged that no doctor "agrees with himself two weeks at a time. They run off into speculative theories — and each one of them kills off his patients, in strict accordance with *his* scientific theory, *for that week*!"[49] A milder critic, the editor of the *St. Louis Union*, commented on the ineffectiveness of some

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3, 151-172, for medical opinions on the causes of cholera circulating in St Louis, see *Missouri Republican*, May 17, June 4, 1849.

[46] *Missouri Republican*, January 4, 1849

[47] Quote from a St. Louis newspaper as recorded by Chambers, *The Conquest of Cholera*, 237.

[48] McPheeters, "The Cholera Epidemics," *One Hundred Years of Medicine*, 733. See also, *Missouri Republican*, January 3, 15, February 5, 10, April 13, and June 17, 1849.

[49] Diary of Edward Bates, June 24, 1849, Bates Papers.

fourteen "known" cures: "How woefully mistaken the authors of these cases have been. The doctors announce their specifics, then die of cholera a few days later."[50]

For other St. Louisans, doctors remained a source of strength and hope during the crisis.[51] The very presence of a physician probably did as much as anything to aid some of the victims in their last hours. Quite often, however, people had trouble obtaining a doctor, because there simply were not enough physicians to serve the city during the crisis. Some remarked that they rarely saw their physician friends; still others hesitated to leave the city, fearing that if they became ill, they would be unable to summon a doctor.[52]

Individual physicians pushed themselves to the point of exhaustion — if not death — in trying to aid the sick. Noted one doctor who nearly died from cholera, "I had more calls than I could possibly attend to. I kept two horses, and frequently had to hire others to do all my work. To get one hour's sleep was a consideration not always attainable."[53] The contributions of the medical profession, then, proved to be the efforts of the individual doctors, rather than anything the profession did as a body.

The impact of the church as a force in society appears to have been similar to that of the medical profession: what aid churches afforded to the individual came mainly from their presence, rather than from any direct action on their part. Churches freely extended their cooperation to any seeking to combat cholera; in an edict the Archbishop of the Catholic Diocese advised all members of his faith to comply with the authorities' recommendations not to eat fish and vegetables, even on Fridays.[54] But as institutions, churches of all denominations found their normal operations disrupted by the epidemic. Some churches had to suspend evening services because of the need for ministers to visit the sick and the dying; other congregations suffered a sharp decline in attendance because of fear as well as of the sickness that prevailed.[55] Moreover, churches curtailed the formal ritual of funerals, owing to the large number of victims awaiting burial, and in time were even asked by authorities to cease the tolling of bells at these services so as not to demoralize the public.[56] All this is not to say that churches may not have benefited the community during the crisis. Churches may well have materially aided their members in their sickness or distress, and, no doubt, spiritually were a comfort to their parishioners. Evidence to this effect, however, is virtually non-existent.

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[50] Quoted in Chambers, *The Conquest of Cholera*, 238-239. Rosenberg effectively demonstrates that because of doctors' inability to curtail cholera, the status of the American medical profession hit a new low nationally in the eyes of the public in 1849. Rosenberg, *The Cholera Years*, 154

[51] In this sense, St. Louis proved something of an exception to the national cynicism that developed toward physicians. See, Francis Sublette to Solomon Sublette, May 5 and 13, 1849, Sublette Papers; Edward [Chase] to wife, June 24, 1849, Edward Chase Papers, and the general lack of criticism of doctors in the *Missouri Republican*, Proceedings of the Committee of Public Health, etc.

[52] Edward [Chase] to wife, June 24, 1849, Edward Chase Papers; Francis Sublette to Solomon Sublette, May 5, and 13, 1849, Sublette Papers.

[53] [S. Pollak, M.D.], *The Autobiography of S Pollak*, 62 After his illness with cholera, Pollak took a trip to recuperate. "Any one away from his place of business," he humorously wrote, "was considered sick or dead. So it came that the news reached Nashville that I was dead . . . I had the satisfaction of reading [my obituary written by a friend] and finding myself a much better man than I knew [I] was "

[54] *Missouri Republican*, January 4, 1849.

For many St. Louisans personal faith afforded them far greater comfort than anything their churches did for them. Businessmen, housewives, politicians, people of all types frequently referred to their faith as the one solid thing they could cling to while living with the menace of cholera.[57] A few St. Louisans viewed the epidemic as God's way of punishing a sinful society.[58] The thoughts of most people, however, were on the more positive aspects of their religions. If the individual had faith in God, he might be spared.[59] In a sense then, St. Louisans believed that their future depended more upon what they did or believed rather than what the church could do for them. In a larger context these attitudes suggest that the society relied primarily on the action of individuals rather than on the action of any agency or institution.

The most positive example of a reliance upon individual action came, ironically enough, in the sphere of government. The normal city government failed to respond to the crisis, both because of its own inadequacies and because of the attitudes that pervaded society. Urged on by a desperate need for action, St. Louisans found an outlet for their voluntarism in the formation of the citizens' Committee of Public Health, which took over all government functions during the height of the epidemic.

The question that initially arises is why the constituted authorites failed to take action before, or even during the epidemic. Why was it that during the peak of the crisis in late June and July an emergency citizens' Committee of Public Health was granted virtually complete authority over the city? Actually, such a transfer of power from the regular government to a volunteer citizens' group in time of crisis was not unusual during the nineteenth century.[60] The reasons behind the transfer in St. Louis lie in the complex relationships between society and government at the mid-nineteenth century. Simply to charge incompetence or ignorance on the part of the city officials, namely the mayor and the city council,[61] is only a partial explanation of this transfer of power.

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[55] Edward [Chase] to wife, June 24, 1849, Edward Chase Papers; D. M. Pollock to Bro[ther] Peterson, July 6, 1849, Missouri History Papers.

[56] Edward [Chase] to wife, June 24, 1849, Edward Chase Papers; Proceedings of the Committee of Public Health, July 14, 1849

[57] *Missouri Republican*, January 15, 1849; Edward Bates to R. B. Frayser, [June, 1849], Bates Papers; Emil Mallinckrodt to brother, July 5, 1849, Emil Mallinckrodt Papers; D. M Pollock to Bro[ther] Peterson, July 6, 1849, Missouri History Papers

[58] I. H. Headlee to Samuel H. Headlee, June 13, 1849, Headlee Papers.

[59] *Missouri Republican*, January 15 and 22, 1849; Edward Bates to R. B. Frayser, [June, 1849], Bates Papers; D. M. Pollock to Bro[ther] Peterson, July 6, 1849, Missouri History Papers

The record of the municipal officials was indeed a lethargic one. In early 1849, the *Missouri Republican* spoke for the growing body of concerned St. Louisans when the paper warned that cholera would soon descend on the city unless preventive steps were taken.[62] By May and early June, when the crisis was at hand, the paper alternately begged and demanded that officials take action.[63] The municipal officials were not totally unresponsive to the problems at hand. In January, the city council proceeded with the draining of Chouteau's Pond, one of the city's biggest bodies of stagnant water.[64] Lacking the power to take definite measures, the Board of Health, an inoperative body founded during the 1830s and comprised of members of the Board of Aldermen, endorsed the popular view that people should not eat fresh vegetables and fish as a means of avoiding cholera.[65] Later, the Board advised citizens to disinfect their own property.[66] In February, the city council considered a proposal calling for new methods of cleaning the streets, having previously appointed four additional street inspectors.[67] But such measures were hardly sufficient to protect the city against an invasion of cholera.

A meeting of the city council on March 1, 1849, is suggestive of some of the problems that thwarted stronger municipal action. One councilman introduced a measure calling for city officials to petition the state legislature for the authority to finance and construct a badly needed sewerage system.[68] The idea of a sewerage system was not new; as early as 1843 various officials had favored such a plan.[69] The majority of the council members were receptive to the idea of a sewerage system, but declined to take any action. One councilman thought it doubtful that the legislature would give its consent to the plan since it had only recently granted the city the authority to issue $50,000 worth of bonds for various general development projects. Another councilman was "friendly to [a] sewerage system," but did not believe the council should sponsor a measure that might involve public taxation unless the people themselves had initiated the proposal.[70]

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[60] The author wishes to thank Glen E. Holt of Washington University for his suggestions on this subject

[61] The city council consisted of the Board of Aldermen and the Board of Delegates. The members of each Board were elected from the various wards

[62] *Missouri Republican*, January 1, 3, 21 and 24, 1849.

[63] *Ibid.*, May 2 and 15, June 12 and 18, 1849

[64] *Ibid.*, January 9, 1849.

[65] *Ibid.*, January 4, 1849

[66] *Ibid* , May 9, 1849.

[67] *Ibid.*, February 21, January 19, 1849.

[68] *Ibid.*, March 1, 1849.

[69] Robert Moore, "Sewerage and House Drainage in St. Louis," *A Sanitary Survey of St. Louis*, 14.

The attitudes of the councilmen reflected in part the prevailing belief of the community in economy in government. Not only were the councilmen slow to pass this or other improvement projects that would cost the city money, but the public as well had shown little interest in programs that might raise their taxes, in spite of the need for such measures. There appeared to be little public enthusiasm for sewerage plans. The complaints of high taxes during the city election in the spring of 1849, while to a large degree politically motivated, also suggest the same propensity for economy in government in light of the lack of municipal services offered.[71] Moreover, the city's apparent lack of revenue tended to ensure a frugal government. While details are lacking on the precise fiscal position of the city government, evidence suggests that funds simply were not available for improvements in normal times, much less during an epidemic.[72]

In addition to the lack of funds and the propensity for economy in government, St. Louis officials faced another problem that continues to plague local governments, namely the division of authority. The city was hampered in what action it could undertake independently of the state legislature. The situation, no doubt, played a part in the city's drive for an independent charter, something it finally obtained in 1875-76. Thus, with the city government limited in its authority, its resources and its outlook, it was not surprising that it failed to respond adequately to the cholera epidemic.

Public opinion also helped to account for the failures of the municipal authorities. Indifference or a lack of awareness tended to throttle even the most worthwhile programs. Just as in the case of the proposed sewerage system, St. Louisans were apathetic toward meetings called by the mayor to consider means of aiding the poor who had suffered during the winter of 1848-49.[73] Later the public displayed little more interest in a similar meeting specifically aimed at combating cholera through the improvement of the wretched living conditions of the emigrant poor.[74] By June, the *Missouri*

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[70] *Missouri Republican*, March 1, 1849

[71] *Ibid* , April 3, 1849.

[72] *Ibid.*, March 1, June 10 and 19, 1849.

[73] *Ibid* , January 4 and 7, February 19, 1849.

[74] *Ibid* , May 12 and 14, 1849.

Republican was bitterly denouncing St. Louisans for their lack of action in view of the ravages of cholera.[75] Prior to the creation of the citizens' Committee of Public Health on June 25, about the only municipal issue to capture a popular following was one in which the business community had a direct stake, that of rebuilding the areas destroyed in the great fire of May 17.[76]

Some St. Louisans may have been unaware of the wretched conditions conducive to the spread of cholera that prevailed in many parts of the city. Prior to the peak crisis months of June and July, few citizens displayed any awareness in their correspondence about what conditions were like outside their own immediate area. Nor did the *Missouri Republican* carry many articles that depicted the filth that existed in certain neighborhoods.[77] The uninformed citizens possibly lived in sections of the city that were isolated from the poorer parts of town, traveling to and from their places of business without ever noticing the slum conditions. When cholera was claiming more than one hundred victims per day, one such resident remarked: "It seems strange to me to see so little of the effects of it. I always imagined it would be awful to be in a city with so much sickness and yet I see & think no more of it than if it were in another city . . . . I am not thrown in contact with any scenes such as are read of in books . . . ."[78] Later, when serving as block inspectors, many St. Louisans seemed genuinely shocked at the filth and disease latent conditions that prevailed in many parts of the city.[79] Whether unaware or apathetic, the effect of the society's outlook was virtually the same: it contributed to the failure of the constituted municipal authorities to respond adequately to the epidemic.

The staggering death rate from cholera did what no amount of pleading on the part of the *Missouri Republican* could do. It forced society to act. In responding to the crisis, the city turned to the one force in society in which the community placed its greatest faith: individual action. From the first mention of cholera, the *Missouri Republican* contended that the citizens as much as the authorities had the responsibility for taking steps to prevent cholera.[80]

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[75] *Ibid* , June 12, 1849.

[76] *Ibid.*, early June, *passim,* see also footnote 36

[77] Equally as important, there is evidence to suggest that even if the press had tried to enlighten the public, it would have failed at least in part, because its message simply did not reach large segments of the population See *ibid* , January 24, June 30, 1849, Proceedings of the Committee of Public Health, July 2, 1849.

[78] Edward [Chase] to wife, June 24, 1849, Edward Chase Papers

[79] William H Belcher to Nathan Belcher, May 21, 1849, Belcher Family Papers, Proceedings of the Committee of Public Health, July 2, 3, 4, 6 and 7, 1849, report of Committee of Public Health as recorded in the *Missouri Republican,* August 3, 1849.

[80] *Missouri Republican*, January 1, 3, 9, 19, May 2, 7, 12, 14, June 12, 14, 24, 1849

Long before the authorities proved unable to cope with the situation, the paper called for St. Louisans to take action themselves. In early January, the *Republican* stressed that the city officials alone could not do enough.[81] The paper went on to suggest a plan that was eventually acted upon six months later with the organization of the citizens' Committee of Public Health. The public, the paper proposed, should meet to organize the city into convenient districts, with sub-districts composed of three or four block sections, and to appoint inspectors from among citizens well known in the districts to see that recommendations by the Board of Health were carried out.[82]

The *Republican* was not alone in preferring to rely on public action. St. Louis' mayor, James G. Barry, asked citizens to volunteer their time and services. On May 14, Mayor Barry called a public meeting to consider measures for improving the living conditions of the emigrant poor and to arrive at proposals for protecting the city against cholera.[83] The approach to problems was a standard one, rather than a move necessitated by the menace of cholera. Previously, the mayor had called a similar meeting to consider what could be done for the poor who had suffered during the winter of 1848-49.[84] Likewise, private citizens sought to enlist the aid of others rather than the assistance of the authorities in behalf of the causes they championed. Three of St. Louis' leading businessmen took it upon themselves to lead a campaign for funds to help the poor suffering from the ravages of cholera.[85]

By late June, the city's critical need for action and its faith in the capacities of its citizens combined to bring about the enactment of the plan proposed by the *Missouri Republican*. Thousands of people had already fled the city.[86] Those who stayed considered the situation desperate enough to call a mass rally on June 25 to demand that the city officials take action.[87] In spite of a heavy rain and muddy streets, several hundred people assembled at the Rotunda for the meeting. Edward Bates was chosen to preside.[88] He in turn appointed a committee composed of twelve leading businessmen and city figures to draw up a list of the public's demands. While the committee was out, one citizen made an impassioned speech against the authorities, demanding that they resign. To the regret at least of Bates, this sentiment in part prevailed.[89] In the end the committee presented to the mayor and the city council the public's demand that they either take action or surrender their authority to some group who would.

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[81] *Ibid.*, January 3, 1849

[82] *Ibid.*

[83] *Ibid.*, May 14, 1849.

[84] *Ibid.*, January 4, 1849.

[85] *Ibid.*, June 19, 1849.

[86] O. W. Jerome to R. H. Miller, June 26, 1849, Robert H. Miller Papers; Emil Mallinckrodt to brother, July 5, 1849, Emil Mallinckrodt Papers; George Penn to Governor M. M. Marmaduke, July 25, 1849, Sappington Papers. The fact that for almost a month St. Louisans repeated the same estimates suggests that the 15,000 to 20,000 figure cited was both a popular and an inflated one. The estimate may have been accurate toward the end of the epidemic (late July), if the figure included, in addition to those who fled, 1) the dead (4,500+) and 2) the large number of transients who did not intend to stay in St. Louis.

[87] Diary of Edward Bates, June 25, 1849, Bates Papers; *Missouri Republican*, June 24, 25, 27, 1849; McPheeters, "The Cholera Epidemics," *One Hundred Years of Medicine*, 69; Moore, "Notes Upon Cholera," *A Sanitary Survey of St. Louis*, 43.

[88] Diary of Edward Bates, June 25, 1849, Bates Papers. See also footnote 87.

At one point the Board of Aldermen hurriedly passed a series of weak public health measures in an effort to save their position.[90] But when presented with the new demand, the Board, the mayor and the entire city council capitulated and handed over the bulk of their constituted authority to the twelve-man delegation that had called upon them. The Committee of Public Health immediately put its power to use. It appointed ward inspectors, and beneath them more than 140 block inspectors, to patrol the neighborhoods daily in order to aid the sick as best they could and to enforce the Committee's sanitation ordinances. Further, the Committee authorized the inspectors to procure at the city's expense drugs and attention for the sick or whatever they deemed necessary to improve health conditions; ordered citizens to clean and disinfect their property, including private property, under the threat of fines up to one hundred dollars; contracted for slop carts to carry off refuse; converted schools into temporary ward hospitals and operated them at public expense; employed drivers and wagons to transport the sick to the hospitals and to carry the dead for burial; maintained drug dispensaries free to all; supplied water free to the poor; and established quarantine regulations for steamboats approaching the city.[91]

The cholera epidemic would eventually have spent itself. In this sense, the efforts of the Committee and the men under it merely hastened the disease's decline. Perhaps the most attractive contributions of the Committee were its efforts to place the sick in temporary ward hospitals and to insure that the block inspectors enforced the sanitation ordinances. Apparently, without realizing the full importance of isolating the victims from the rest of the community, the Committee helped stop the spread of cholera. But, more than anything, the Committee provided the badly needed leadership the city had been lacking. This in itself was a great comfort to St. Louisans, who now at least felt that something was being done to rid the community of cholera.[92]

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[89] Diary of Edward Bates, June 25, 1849, Bates Papers.

[90] *Missouri Republican*, June 26, 1849.

[91] Proceedings of the Committee of Public Health, *passim*.

[92] For examples of this, see *Missouri Republican*, June 27-August 1, 1849, *passim:* Diary of Edward Bates, June 26-August 1, 1849, *passim*, Bates Papers

The twelve men who comprised the Committee of Public Health[93] were on the whole young, prominent St. Louisans who were motivated primarily by the city's desperate need for leadership. Most of the Commitee's members were men in their late thirties or early forties, who had arrived in St. Louis in the 1830s to begin their careers. Five Committee members were businessmen or manufacturers, three were lawyers, one was an editor, one was a writer-actor, one was a steamboat captain, and one was known only as a man of means.[94]

Neither politics nor personal motives appear to have played a part in the selection or the subsequent activities of the Committee members.[95] The group was a bipartisan one; of the seven about whom party affiliations are known, two were Whigs and five, Democrats. The minutes of the Committee's daily meetings reveal that the members functioned in almost complete harmony; what few dissenting votes were cast seem to have been over policy issues and had no effect on the later workings of the Committee.[96] Only four of the seven Committee members who had held an appointive or elective office prior to 1849 continued to hold posts after the crisis. Apparently only one, Luther M. Kennett, capitalized directly on his service to the community. Kennett emerged from the epidemic as the city's most popular leader and was subsequently elected mayor from 1850 to 1853 and Congressman in 1854, when he defeated the aging Thomas Hart Benton.[97]

The more than 140 block inspectors who served under the Committee came from all walks of life. The Committee had no trouble filling these evidently volunteer positions; within several days after the Committee began operating, virtually all the appointments had been made. The varied backgrounds of these men can be seen in an occupational survey of some 100 block inspectors,[98] most of whom probably resided in the neighborhoods in which they served. Those assigned to areas in the Second, Third and Fourth Wards tended to come from business or professional backgrounds. Conversely, those who worked blocks in the Fifth and Sixth Wards were most often clerks, craftsmen or laborers. A more detailed study of St. Louis society in the mid-nineteenth century reveals the same occupational breakdown by wards.[99]

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[93] The members of the Committee were Lewis Bach, R S. Blennerhasset, A B. Chambers, William G Clark, Thomas Dennis, J M Field, T. T Gantt, Thomas Gray, Isaac A. Hedges, Luther M Kennett, H L. Patterson and Trusten Polk James Clemens, Jr , and George Collier were originally selected, but declined due to illness and personal reasons. They were replaced by Dennis and Patterson

[94] The description of the Committee members is based on information found in William Hyde and Howard L Conard, eds., *Encyclopedia of the History of St. Louis*, 4 vols (New York, 1899), J Thomas Scharf, *History of Saint Louis City and County*, 2 vols. (Philadelphia, 1883), Elihu H. Shepard, *The Early History of St. Louis and Missouri from Its First Exploration by White Men in 1763 to 1843* (St. Louis, 1870); and Walter B Stevens, *St. Louis The Fourth City, 1764-1909*, 3 vols. (St Louis, 1909)

[95] *Ibid*

[96] Proceedings of the Committee of Public Health, *passim*

[97] See footnote 94

[98] This study is based on an occupational survey of 55 block inspectors who declined compensation and 46 who accepted pay for their services. In making this survey, the following business directories were consulted: J. H Sloss, *The St. Louis Directory for 1848* (St Louis, 1848) and *Green's St. Louis Directory, for 1851* (St. Louis, 1850)

The positive response of St. Louisans to the cholera malady was not limited to activities of those connected with the Committee of Public Health. On June 27, the managers of the House of Industry, possibly an association of mechanics, announced their intention to make drugs and medical services available to the poor.[100] Two days later the Sisters of Charity, a local Catholic sisterhood, volunteered to man the temporary Fifth Ward hospital, in addition to their regular duties that involved staffing St. Louis Hospital and operating one of the diocesan orphan asylums.[101] Out of the mass meeting that created the Committee of Public Health came the resolve to organize an "Orphan's Committee" for each ward. By July 5, committeemen had been named to collect and distribute contributions for the relief of children "made destitute by the prevailing epidemic."[102] Younger St. Louisans also volunteered their time and effort in behalf of the community. Public meetings in the Third and Fifth Wards resulted in the formation of "Sanitation Societies," comprised mainly of young men pledged to help nurse the sick and aid the block inspectors in any way they could.[103]

Whether young or old, businessmen or laborers, St. Louisans responded to the cholera epidemic in virtually the same way. Neither the medical profession, the churches nor the municipal government afforded the people much assistance during the crisis. More importantly, for the most part neither did St. Louisans look to these agencies for help. The society relied above all on the voluntary efforts of the citizens themselves. To be sure, the magnitude of the crisis demanded that the public take action if all else failed. But it was the voluntaristic character of the St. Louis society that determined both its outlook and its response to the epidemic.

III

In the long run the impact of the cholera epidemic of 1849 on St. Louis society was mixed. Business was not affected, politics only slightly, and benevolent societies only moderately so. Yet the experience of the epidemic raised basic questions about the voluntaristic approach of the society to its problems. The epidemic forced the city to begin to come to terms for the first time with many of the problems it would continue to face as an emerging urban community. Out of this experience St. Louisans moved, if somewhat hesitantly, toward the adoption of public health measures.

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[99] For a general survey of occupational patterns by wards, see Shockey, "Immigrants in St Louis," *passim*

[100] *Missouri Republican*, June 27, 1849

[101] Proceedings of the Committee of Public Health, June 29, 1849, Sister Owens, "St Louis Hospital," 25

[102] *Missouri Republican*, July 29, 1849

[103] *Ibid* , July 12 and 15, 1849

As quickly as the epidemic ended, business boomed. Beginning in August, river traffic picked up, men returned to work, and hopes for the future soared. At the earliest sign that cholera was on the decline, the *Missouri Republican* optimistically reported that over eighty buildings were scheduled for immediate erection, over fifty of which were to be three to five stories tall.[104] The change in attitude of Emil Mallinckrodt, a German immigrant, was representative of how quickly businessmen put the epidemic out of their minds. Writing at the height of the crisis to his brother in Germany, Mallinckrodt asserted that he would "never spend another summer in the west of America."[105] By November, however, the land he had purchased some months earlier had almost trebled in value, and he happily forecast that "St. Louis will be greater than London."[106]

The cholera epidemic had only slightly more impact on St. Louis politics after 1849 than it had on the business community. Aside from Mayor Luther Kennett, very few of the men who had served in any capacity during the epidemic rose to public office after the crisis was over. In 1850-51, only seven of some eighty-four municipal posts (or less than 10% of the public offices) were held by people who had been active in the campaign against cholera. Nor were their positions very impressive, with the exception of Kennett's: one was an alderman, one a delegate, one a deputy marshall, one the comptroller, and two street inspectors.[107]

The cholera epidemic had a more substantial impact on a variety of benevolent societies and private charities begun in the 1850s. The campaign for a Jewish hospital, for example, gained much of its impetus from the need for better health services and facilities exposed by the pestilence.[108] In another sense, however, the epidemic's impact on the hospital campaign and its at least indirect influence on the private orphanages founded during the 1850s is significant, because it tended to stimulate further voluntarism on the part of the public. Neither the drive for the hospital nor the foundation of orphanages represented a departure from the society's basic approach.

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[104] *Missouri Republican*, July 29, 1849

[105] Emil Mallinckrodt to brother, July 5, 1849, Emil Mallinckrodt Papers

[106] *Ibid.*, November 20, 1849

[107] This study is based on a survey of the municipal officials listed in Hyde and Conard, eds., *Encyclopedia of the History of St. Louis* II, 445-447.

[108] Jack Mauser, "The Signpost and the Destination," an unpublished address delivered at the dedication of the Jewish Hospital Medical Center, 1956, *passim*

It was in the area of municipal affairs, however, that the cholera epidemic caused some St. Louisans to question the society's voluntaristic approach. Quite naturally, the magnitude of the epidemic made men willing to have the city (through the Committee of Public Health) assume certain responsibilities toward the citizens that the city normally left to private philanthropy. At one point the *Missouri Republican* argued that if the poor could not afford well-ventilated quarters and decent living conditions, these necessities should be provided for them.[109] The Committee of Public Health unhesitatingly made medical care and drugs available to all and placed stringent demands on private property in the name of public health.

The members of the Committee of Public Health, however, went further in their thinking. Their experience in the cholera epidemic had convinced them that the city should permanently assume the responsibility for many of the problems they faced. The Committee members had been shocked at the appalling conditions that prevailed in parts of every ward. When they handed back the municipal powers temporarily granted to them, the members recommended in the strongest terms that the city should see to it that there was a sewerage system, that streets were paved, that the city was cleaned up, that the street inspectors had sufficient funds and authority, and that there were adequate quarantine regulations.[110]

Some of these proposals involved little more than an extension of services already rendered by the city. But it was the reasoning of the Committee members that revealed their recognition of the need for municipal government to assume the permanent burden of maintaining the health of the community. They had come to realize that individual citizens could not and should not bear the responsibility of public health. The Committee argued that for citizens the task of keeping the city clean and insuring proper sanitation was "rendered so very difficult that most families abandon it and content themselves with few efforts to combat the prevailing influences. This state of things grows worse and worse, and finally the most frightful accumulation of dirt and filth is regarded as a thing of course."[111]

In the years immediately following the epidemic the city showed some signs of acting on the Committee's recommendations. During Luther Kennett's tenure as mayor (1850-53), St. Louis constructed its first sewer main, took steps to provide a better distribution of water, instituted weekly garbage service, and enacted a number of general municipal reforms that included the organization of police and fire departments.[112] Moreover, in 1852, the city started a Health Department and reorganized the Board of Health.[113]

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[109] *Missouri Republican*, June 19, 1849.

[110] Report of the Committee of Public Health as recorded in the *Missouri Republican*, August 3, 1849.

[111] *Ibid.*

But beyond these measures, the city progressed little further. The Board of Health proved to be as ineffective as before. By 1861, the quarantine regulations affecting river traffic were dropped.[114] Generally speaking, conditions began to revert to what they were before. More critically, the city had to depend upon volunteer action during the cholera epidemic of 1866.[115] Like most of the nation the city was slow to change its ways and lasting public health measures still lay in the future. St. Louis, for example, would not create a "real" Board of Health with adequate powers until 1867. The organization of the sanitary police and the appointment of a Health Commissioner came even later. St. Louisans, like a majority of Americans in the mid-nineteenth century, were simply not prepared to abandon their voluntaristic approach.[116]

In the area of municipal affairs, then, as in other areas, the impact of the cholera epidemic was mixed. But in a sense it was in the field of community action that the impact proved most enduring. The municipal improvements that came out of the epidemic and the sense of public awareness may have been fleeting, but they did represent a step in the development of a permanent public health discipline. In time the idea of governmental responsibility would take on greater strength. Because of the cholera epidemic of 1849, some St. Louisans had come to see what others would eventually realize, that theirs was the problem of a voluntaristic society operating in an urban environment.

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[112] Oscar Mervene Ross, "The History of St Louis, 1848-1853" (unpublished M A Thesis, Washington University, 1949), 46-71.

[113] *Ibid* , 70

[114] Based on data supplied by the St Louis Department of Public Health

[115] Moore, "Cholera Epidemics," *One Hundred Years of Medicine,* 80

[116] For the national pattern, see Rosenberg, *The Cholera Years, passim,* especially 230-234

MEDICO-HISTORICAL NEWS AND ACTIVITIES

ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

Annual Meetings: The 50th anniversary meeting of the Association will take place, as previously announced, at the Warwick Hotel, Philadelphia, Pa., April 30-May 3, 1975. Future meetings will be held in Galveston, Texas (1976), Madison, Wis. (1977), and Kansas City, Kan. (1978).

Joint Session: As approved by the Council of the Association at its meeting on May 1, 1974, a joint session of the American Association for the History of Medicine and the American Historical Association was held at the annual meeting of the latter organization (Chicago, December 28-30, 1974). The subject of the Session was "Health in the City" and the following papers were presented on December 29: "Health in the City: A Comparative Approach," George Rosen; "Social Class and Medical Care: The Hospital in 19th-Century Boston," Morris Vogel; "Use and Abuse of Medical Charity: Late 19th-Century New York," Gert Brieger; "Comment," Charles Rosenberg. This session was chaired by Dr. Rosen.

NATIONAL NEWS

American Medical Association

The Division of Library and Archival Services of the AMA has been, for some time, collecting and documenting the history of its constituent medical societies. A special collection of printed histories by and on state and county medical societies has been formed. A recent survey has elicited new information on archival resources and published sources. In addition, the Division has been actively gathering information on collective biographies and directories. Information is solicited on further sources of bio-bibliographic data, printed histories, and archival collections with the hope of issuing a guide to the history of state and county medical societies for the bicentennial years. Information and inquiries may be addressed to the Division at 535 North Dearborn St., Chicago, Ill. 60610.

History of Dermatology Club

The second annual meeting of the Club was held in Chicago on December 10, 1974. Dr. Samuel J. Zakon gave the annual lecture, entitled "Reminiscences of the Viennese School of Dermatology." Dr. Herman Beerman and Dr. Marion Sulzberger were elected to honorary membership. Officers re-elected were Lawrence Charles Parish (president) and Gerald Wachs (secretary-treasurer). The next meeting of the Club will be held in San Francisco in December 1975 at the time of the American Academy of Dermatology meeting. Requests for further information can be addressed to Dr. Parish at 1601 Walnut St., Philadelphia, Pa. 19102.

Institute for Human Values in Medicine

The Institute, which receives its major financial support from the National Endowment for the Humanities, is a project sponsored by the Society for Health and Human Values. The Institute offers fellowships for periods not exceeding six months to persons qualified in either the health professions or the humanities. Announcements of the 1975 awards, for which applications must have been received by February 15, 1975, will be made by April 15. Further information about the program can be had from Thomas K. McElhinney, Assistant Director, Institute on Human Values in Medicine, 723 Witherspoon Building, Philadelphia, Pa. 19707.

Josiah Macy, Jr. Foundation

A grant of $53,610 was made to Duke University School of Medicine to allow the institution to add a faculty member in its program in the history of medicine which was launched in 1967 and assisted by Macy funds.

National Library of Medicine

The National Library of Medicine has put on display an exhibit entitled, "The Hopkins Four: Osler, Halsted, Welch, and Kelly." The purpose of the exhibit is to examine briefly the careers and major contributions of the four physicians by viewing them through the eyes of their contemporaries. The exhibit, which includes pictorial materials, books, manuscripts, and artifacts, may be seen January 10-May 30, 1975.

Oral History Association

The Association will hold its 10th National Colloquium on Oral History, October 23-26, 1975, at the Grove Park Inn in Asheville, North Carolina. The theme for the Colloquium will be "Oral History Comes of Age: The 10th National Colloquium on Oral History." Chairpersons for the Colloquium are Thomas Charlton and Waddy Moore. For Further information about the Association write to the Secretary, Ronald E. Marcello, Box 13734, North Texas Station, North Texas State University, Denton, Texas 76203.

Society for Health and Human Values

At the annual meeting of the Society, held in Chicago on November 13, 1974, Carleton B. Chapman delivered the annual oration. His topic was "The Physician's Primary Obligation to His Patient."

University of California, Los Angeles

An international conference on "First Images of America: The Impact of the New World on the Old," was held in conjunction with the 21st meeting of the Renaissance Society of America, February 6-9, 1975. One of the 21 sessions was devoted to "The Impact of Medicine." Chaired by Max Delbruch, the session included contributions by Charles H. Talbot ("America and the European Drug Trade"), Francisco Guerra ("The Problem of Syphilis"), and Wilhelm Møller-Christensen ("Leprosy and Its Way from the Old to the New World"). A tape of the conference will be available.

Appointment

Dr. David F. Musto, Associate Professor of History and Psychiatry at Yale University, has been appointed Associate Director of the National Humanities Institute recently established at that University by a grant of $2.7 million from the National Endowment for the Humanities. Dr. Musto's primary responsibility will be to develop programs relating the humanities to public policy and contemporary social issues. He continues his faculty rank.

PROGRAMS OF MEETINGS

College of Physicians of Philadelphia, Section on Medical History

January 6, 1975: "The Lankenau Hospital Research Institute Marine Experimental Station on Cape Cod, 1930-48," Fred B. Rogers (Discussion by Nicholas Padis); "History of Medical Women's International Association," Alma Dea Morani.

February 10, 1975: "Podiatric Medicine Function and Education," James E. Bates; "Optometric Medicine, Its History and Potential," Norman E. Wallis and Lawrence S. Flaum.

Josiah C. Trent Society for the History of medicine

February 6, 1975: A Showing of New Films on the History of Medicine, "Paré—John Hunter—Vesalius."

Mayo Foundation History of Medicine Society

January 8, 1975: "Philately in General and the Doctors Mayo Stamp and Its Issuance in Particular," R. Putnam Kingsbury; "American Physicians Honored on U. S. Stamps," Marc A. Shampo; "'Blood Transfusion'—Depicted on Stamps," Robert A. Kyle.

University of Virginia Medical History Society

February 11, 1975: "Renaissance Medical Schools: A Travelogue Through Northern Italy" (an illustrated lecture), Ranes C. Chakravorty.

Washington Society for the History of Medicine

January 23 1975: "Fear in Greek Mythology, Medicine, and Art," Thomas S. Hall; "The Experimental Psychologist: A New Role in American Society and Culture, 1885-1915," Michael Sokal.

William Snow Miller Medical History Seminar

February 19, 1975: "Physicians, Progressives & Politicians (The First American Debate over Compulsory Health Insurance)," Ronald Numbers.

NEWS FROM ABROAD

Israel

A department of the history of medicine has been initiated at the University of Tel Aviv. Present at the inaugural ceremonies were Dr. and Mrs. Yosef Meyshan, after whom the department has been named in recognition of their initiative and generosity which made its realization possible. In responding to the University's expressions of appreciation, Dr. Meyshan said that he saw a need for the study of medical history as "a guarantee of the development of medicine in the spirit of humanitarian principles that have guided medicine in the past." The opening lecture was delivered by Prof. Z. Yavetz on the subject, "The Position of the Physician in Ancient Rome."

Switzerland

The papers comprising the "Colloque d'histoire de la médicine" which was held at the annual meeting of the Société Suisse d'Histoire de la Médecine et des Sciences Naturelles in Neuchâtel October 11-12, 1975, will be published in a special issue of *Gesnerus*. The subscription for single issues outside Switzerland is Fr. 37. Subscriptions may be sent to Verlag Sauerlander, zu Hd. von Herrn Steinmann, CH-5000 Aarau, Switzerland.

BOOK REVIEWS

GEORGE W. CORNER *Doctor Kane of the Arctic Seas.* Philadelphia: Temple University Press, 1972. xiii + 306 pp. $10.00

Like other books from the pen of Dr. George W. Corner, this account of Dr. Kane is remarkable for mastery of subject matter, sagacious selection of material and limpid style.

Dr. Corner's interest in Dr. Kane's career and writings began early. By fortunate chance, Grandfather Corner bought a copy of Dr. Kane's *Magnum Opus* in 1856 when it first appeared, a copy read by Dr. Corner's father when a child, and later by Dr. Corner on Sundays in his grandfather's home. To both the accounts of desperate adventures on the sea and in the arctic ice and snow were most fascinating. Later Dr. Corner learned that Dr. Kane had lived near his paternal grandfather's home and bought supplies from his maternal grandfather. Then Dr. Corner set out to learn more about Dr. Kane — a task in which he was successful indeed.

Elisha Kent Kane, descendant and member of a distinguished family, was a slight, fragile-appearing man — tormented from the age of about fourteen by recurrent bouts of rheumatic fever, soon accompanied by endocarditis. It seems incredible that he could survive until the age of thirty-seven the physical stresses which would have overcome many strong men. He received the M.D. degree from the University of Pennsylvania at the age of twenty-two — foremost student in his class and author of a widely acclaimed dissertation on a test for pregnancy.

His father, feeling that Elisha's health was too precarious for the demands of private practice, quietly arranged for his appointment as a naval surgeon — "a healthy outdoor life with regular occupation and opportunity for scientific observations. . . ." In May 1843, the young doctor sailed aboard the frigate *Brandywine* for China.

During the voyage he studied geometry, algebra, navigation and European languages. He travelled in the Philippines, and made an extremely dangerous descent into the crater of the Taal Volcano, where he collected specimens of volcanic minerals and water.

When the American Legation completed negotiations in China, Dr. Kane resigned and settled to practice medicine at Whampoa. After about six months he became severely ill with what is assumed to have been cholera and, on slowly recovering, sailed for Singapore. There are but sketchy reports of his travels for the next six months, but he was in India, Egypt and finally Greece — enduring illness (plague?), injury (infected leg wound) and robbery, despite which he explored and collected wherever he went. He was at home in Philadelphia, now aged twenty-five, after little more than two years in which he had travelled about 40,000 miles, on all five major continents, and on the North and South Atlantic, the Pacific, and the Mediterranean and Adriatic Seas.

The war with Mexico soon broke out, and Dr. Kane left for Mexico City with confidential dispatches from President Polk for General Scott. En route he was severely wounded, saved the lives of General Gaona and other Mexican officers, and eventually returned to a hero's welcome in Philadelphia.

In 1845 Sir John Franklin, an English naval officer, had disappeared in the Arctic. Henry Grinnell, a wealthy and influential merchant, and Lady Franklin organized a search expedition and secured the cooperation of the United States Navy. Dr. Kane volunteered and was accepted as surgeon on the *Advance*, an American rescue ship.

Franklin had been sent by the British Admiralty to seek a northwest passage to the Pacific. The idea had long persisted that an Open Polar Sea existed north of the known ice barriers, and in the mid-nineteenth century a number of thoughtful and informed men supported this hypothesis. If Franklin had reached such an open sea, he and his men might have been marooned there or have left evidence of their fates.

The two small, inadequately equipped vessels of the First U.S. Grinnell Expedition set sail from the New York Navy Yard on May 22, 1850. The story of their sixteen-month voyage is an almost unbelievable tale of hardships, severe scurvy, constant danger — and a safe return without the loss of a single life.

Kane began at once to write the story of the trip, but was in such demand as a lecturer that the writing went slowly. At this time began his strange courtship of Margaret Fox, a sensational spiritualistic medium. He felt she was living a life of charlatanism and deceit, which she must give up and become his wife. He finally placed her in a home in a small village just before he left again for the Arctic as Captain on the *Advance* in 1853.

This was an even more hazardous and disaster-ridden voyage. Illness and secession were only some of the problems. At last in 1855 they were forced to abandon the ice-bound *Advance* and set out wearily by foot, sledge and small boats. The New York *Daily Times* of October 12, 1855, bore the headline "Dr. Kane Home Again."

At "home again," he spent long hours recording geodetic, geophysical, astronomical, climatological, meteorological and biological data, with many illustrations. His book, *Arctic Explorations: The Second Grinnell Expedition in Search of Sir John Franklin, 1853, '54, '55*, sold 65,000 copies the first year — a great success.

His health continued to fail. He kept in touch with Margaret Fox and bought her a diamond bracelet at Tiffany's. Meanwhile, Lady Franklin, unaware of how ill he was, urged him to meet her in England to help persuade the Admiralty to send a final search expedition to the Arctic. He went to England in October, where he was warmly received and presented with a beautiful silver service by the Government. His illness became so severe that he sought a warmer climate, and sailed for Cuba. He died in Havana on February 16, 1857. The slow funeral journey back to Philadelphia was marked by tributes previously unequalled in America.

Dr. Corner's is an absorbing study of this exceptional man. Dr. Kane explored and mapped the waterway northward from the western shore of Greenland, "the American Route to the Pole." He established a relationship of friendship and trust with the Eskimos which was a great benefit to later explorers. His books were well written and abundantly illustrated with his fine drawings.

In the words of the Chairman of the Committee of Arrangements for his funeral, ". . .one who claimed no distinction as a leader of armies or as a director in statesmanship, and the outburst of public feeling and demonstration of general regard will be the proudest monument that can be raised to the lofty and gentle qualities, the enterprise, the philanthropy, the science, and the friendship of Elisha Kent Kane."

Reviewed by JOHN FIELD, Ph.D., Professor of Physiology and Associate Dean Emeritus, University of California School of Medicine, Los Angeles, Calif.

ROGER HAHN. *The Anatomy of a Scientific Institution: The Paris Academy of Sciences, 1666-1803*. Berkeley, Los Angeles, London: University of California Press, 1971. xiv + 433 pp., ill., $12.00

Membership in the Paris Academy of Sciences was the most important position a man of science could attain during the Old Regime. Limited to about fifty active resident members, half of whom represented the exact sciences (mathematics, astronomy, physics) and half the natural sciences (anatomy, chemistry, botany), the Academy constituted an elite body and was, for all practical purposes, the exclusive forum for scientific activity in France. It effectively controlled support for scientific studies, passed judgment on such researches, and, with the exception of several journals devoted to the healing arts, monopolized publication on scientific subjects. Founded in 1666 through the efforts of a small group of intellectuals and Louis XIV's brilliant minister, Colbert, the Academy enjoyed the enviable position of at once being the recipient of royal prestige and financial support while conserving substantial autonomy. Academicians received pensions from the Crown, but they pursued their own research interests, presented their work, and judged that of their less fortunate non-academic colleagues independently of government interference.

Roger Hahn's book describes the intimate relationship between the Academy of Sciences and its enveloping society. The author demonstrates convincingly that the genesis and flourishing of the Academy, its demise during the French Revolution and subsequent regeneration in drastically altered form cannot be understood apart from the structure of and transformations occurring in French society and, to a lesser extent, in science itself. Thus Professor Hahn is fundamentally concerned neither with the narrow institutional history of the Academy nor with the scientific achievements of its members, but rather with what may be called the social history of this scientific institution. Academicians like d'Alembert, Lavoisier, Condorcet, Fourcroy and their less well-known colleagues are seen in a new light, as planners and administrators struggling with the pragmatic problem of how the scientific enterprise can best be organized. Their solutions, however diverse, all reflect assumptions about the relationship of science with politics and society.

Hahn's method is historical, but, as suggested by the book's title, his goal is to provide a model for the analysis or "anatomy" of a scientific institution. He explicitly invokes Parsonian sociological theory to support the thesis that the success of a scientific institution at any given time depends upon that institution's ability to harmonize with various external pressures — political demands, social values, philosophical currents, the demands of the larger scientific community, etc. In the specific historical instance of the Paris Academy of Sciences, an almost ideal compatibility obtained between scientific institution and Old Regime society, a relationship which did not begin to deteriorate until after the middle of the 18th century. Few if any institutions rivalled the Academy of Sciences in fulfilling, indeed epitomizing, the values of the French Enlightenment. For that optimistic era, science was the instrument by which progress — moral as well as material — would be realized. And science, in the view of most men of letters, was a rational and orderly activity: its truths were absolute and their classic simplicity would gradually be revealed through the communal efforts of educated men. A scientific society would bring glory and practical benefits to the state wise enough to confer a special status upon scientists as professional men of learning. The values of the French absolute monarchy and the needs of the growing but still rather small and unspecialized scientific community thus found a common meeting place in the Academy of Sciences. After midcentury, however, the Academy became vulnerable to the same forces which were undermining the Old Regime. As protests against guilds and elitism in general became more strident, these charges were levelled against the Academy. At the same time the scientific community's burgeoning numerical growth and differentiation into technical specialties made the Academy, whose structure remained virtually unchanged, increasingly unrepresentative and conservative. In short it was becoming a maladapted institution.

After broadly sketching the Academy's relationship with Old Regime society and science, Hahn traces its death throes during the Revolutionary period in much detail in chapters entitled "Revolutionary Context," "Legislative Debates," and "Closing the Academy." So-called "free societies" attempted to fill the void left by the legal abolition of the Academy on 8 August 1793, but these spontaneously organized, "democratic" scientific clubs, though they may have fit in with Jacobin ideology, failed to carry on scientific research and training adequately in the face of economic crisis, military emergency, and the demoralized state of the scientific community. Active scientific work recrystallized around a number of specialized teaching institutions (Ecole centrale des Travaux Publiques, Ecoles de Santé, etc.) organized and closely controlled by the Revolutionary government. Although the Academy's legacy fell to the Institute, the latter was but a showcase for meetings of distinguished scientists, not the principal theater of scientific activity that the Academy had been.

Professor Hahn's book contains many perceptive insights. He shows that artisan groups played a decisive role during the early 1790s in toppling an Academy which had consistently excluded them. The artisans, Hahn points out, attacked the elitist attitudes of the academician-scientists, not science itself. Nor was the Robespierre regime fundamentally hostile toward science as was alleged by post-Thermidorean commentators eager to find a scapegoat for the Academy's misfortunes. There are illuminating discussions of the challenge to the Academy's founding principles posed by the rise of the romantic concept of individual genius put forward by Diderot and Rousseau and exploited by Bernardin de Saint-Pierre and the rejected scientist turned radical journalist, Jean-Paul Marat. Lavoisier's and Condorcet's widely different approaches in trying to save the Academy are analyzed critically and in depth.

This book is disappointing in some respects. First, attention is focused to such an extent upon the Revolution that the Academy's life during the 18th century appears neglected by comparison. Of course, part of the apparent distortion in favor of the Revolution is reduced by the fact that a great deal actually happened in just a few years. In addition source material from this period is abundant. Nevertheless, it is disconcerting to read as early as Chapter 3 ("Integration into the Old Regime") that we are dealing with the "pre-revolutionary period." One would like to know more about the Academy during its prime. What precisely were the Academy's relations with the governments of Louis XV and Louis XVI? What were the social origins of academicians and how were they selected? Was entry into the Academy really based on merit to the degree that Hahn claims or did class distinctions, evident in the exclusion of artisans, have other consequences on the choice of academicians and scientific interests? What social distinctions, if any, separated scientists, as a sub-group, from the larger community of men of letters? These questions deserve consideration on their own in the context of the Old Regime apart from their relevance to the Revolution.

Second, one would expect that the Academy's scientific activities would be considered at greater length even in an analysis of the institution's interaction with society. Brief allusions to successive "fads" or "vogues" in anatomy, natural history, etc. do not do justice to these serious interests of the Academy. Historians of medicine and public health will be disappointed with the superficial treatment of the Academy's concerted effort to reform the Hôtel-Dieu and other French hospitals.

The above comments are not intended to deprecate the overall high quality and importance of this work. Only so much can be covered in a single volume. Mr. Hahn's book implicitly and explicitly suggests fruitful areas for further investigation. He notes, for example, that royal academies of surgery and medicine were in part modeled after the Academy of Sciences and shared a common fate during the Revolution. This reviewer's own study of the Academy of Surgery is indebted to the present work for stimulating ideas and sources. Incidentally, the Paris surgeons present a notable exception to the scientific Academy's general policy of excluding artisans. From its inception the Academy of Sciences received leading surgeons into its class of anatomists while the same men as surgeons were classified legally and regarded socially as artisans until about the mid-18th century.

Hahn's massive bibliography, which includes a detailed enumeration of archival materials, biographical sources for 224 academicians, and 44 pages of references to published works, will be a tremendous aid to scholars. Copious footnotes complete the superb documentation. In sum, *The Anatomy of a Scientific Institution: The Paris*

Academy of Sciences, 1666-1803 is a synthesis of current knowledge, an important innovation in the historiography of science, and an incentive to further research. The author's style renders a vast amount of material into lucid, interesting reading.

Reviewed by TOBY GELFAND, Ph.D., Assistant Professor in the Program in History and Philosophy of Science at Princeton University, Princeton, N.J.

JAMES E. HARRIS and KENT R. WEEKS. *X-Raying the Pharaohs.* Illustrated with photographs. New York: Charles Scribner's Sons, 1973. 195 pp. $10.

A roentgenologic study of the mummies of the Pharaohs has been conducted under the auspices of the School of Dentistry of the University of Michigan with the collaboration of the University of Alexandria and the Egyptian Museum and Antiquities Department. The Michigan group is headed by Dr. James E. Harris, professor of dentistry and chairman of the Department of Orthodontics at Ann Arbor. The team includes Dr. Kent R. Weeks, chairman of the Department of Anthropology at the American University in Cairo, Dr. Walter Whitehouse, chairman of the Department of Radiology at the University of Michigan, and several additional members. The project owes its genesis not to interest in Egyptology but to a desire to study the evolution of human dentition. The volume under review is a clear and extremely interesting summary designed for the general reader. The needs of specialists are to be served by a forthcoming *Roentgenologic Atlas of the Pharaohs*.

The well-designed book opens with what is called A Portfolio of Pictures. This section contains 38 pages of illustrations, of which the first four are in color and exhibit the chromatic alterations caused by different methods of mummification. These vivid and instructive depictions are followed by an ample selection of black-and-white pictures which display mummies and roentgenograms. These show such items as the disarrayed jewels of the lady Imenit, the cranial wounds of one Seqenenre Tao, and the prepuce of his son, Ahmose I. The placing of the illustrations at the beginning of the text is a wise arrangement, since it leads the reader onward.

The text proper is highly satisfactory for its purpose. It discusses successively the problems and the methods of investigation; the techniques of mummification employed during different epochs of Egyptian history; the activities of grave robbers and defilers; and the roentgen findings in monarchs of the seventeenth to the twentieth dynasty. References, tables of chronology and genealogy, and an index complete the contents.

From the viewpoint of palaeopathology the roentgen findings which Drs. Harris and Weeks present may be characterized as interesting but not spectacular: arthritis, scoliosis, fractures, dental disease. More important is the fact that hereditary characteristics were traceable in some of the royal families studied. For example in women of the late seventeenth and eighteenth dynasty a uniform type of malocclusion and cranial conformation appeared in four generations. It is of equal interest that, as the roentgen findings demonstrate, the line of genetic continuity was interrupted repeatedly during the course of centuries. Moreover, in some instances it was observed that skeletal age failed to correspond with extant annalistic records; hence revision of traditional chronologies may become necessary. Obviously such revision will require great care and forebearance, since estimation of skeletal age is still a crude process and yields approximations. But if skeletons may be deceptive, annalists are sometimes mendacious.

Among other aspects which require at least brief mention the first has to do with methods. Some of the most important results of the investigation depended on comparing the roentgenograms of series of individuals, especially the skull films. Comparability was obtained by means of a system of coordinates, the resultant data being processed in a computer, which produced a schematic tracing of each film. This procedure is a gratifying example of the application of new methods to palaeopathology. The need for new methods and for their adaptation to this subject has been mentioned insistently by recent authors and will be familiar to many readers of the *Bulletin*.

Another important subject is the technique of mummification. This may be regarded in part as a problem in technological history. It is quite clear that Old Kingdom methods were altered radically with the advent of the New Kingdom and were changed again under the twenty-first dynasty. It would be interesting to know whatever has been discovered about the reasons for these procedural alterations. Doubtless this problem will be discussed in special publications. Interestingly, Dr. Zaki Iskander, present director-general of the Egyptian Antiquities Department, has tested natron in different preparations in order to ascertain the effects on the tissues of animals. Solid natron was found to exert dehydrating action more rapidly than the dissolved form. We may consider these trials an example of experimental archaeology.

These weighty technical and historical matters do not occupy the whole of the Harris-Weeks text. Readers who love a story will enjoy the narrative of the wicked Abd el-Rassoul and his brother Mohammed — grave robbers both. Nor should I omit to mention the tale of Pa-ser, mayor of ancient Thebes, and Pa-wero, Chief of the Desert Police of the Necropolis. These yarns equal anything in the Arabian Nights and anything that the *New York Times* can tell us about the contemporary Etruscan underground.

Reviewed by SAUL JARCHO, M.D., Editor in Chief, *Bulletin of the New York Academy of Medicine*, New York, N.Y.

THE BULLETIN RECENTLY RECEIVED*

George A. Bender and John Parascandola (Editors). *Historical Hobbies for the Pharmacist.* A Symposium Sponsored by the American Institute of the History of Pharmacy, Boston, July 22, 1973. Madison, Wis.: American Institute of History of Pharmacy, 1974. 57 pp. Ill.

Paul Casser. *Landmarks in the Development of Forensic Medicine in the Maltese Islands.* Malta: International Academy of Legal Medicine and Social Medicine, 1974.

Harris L. Coulter. *Science and Ethics in American Medicine, 1800-1914 (Divided Legacy: A History of the Schism in Medical Thought,* vol. 3). Washington, D.C.: McGrath Publishing Company, 1973. xvi + 546 pp. $17.50.

David L. Cowen. *The Spread and Influence of British Pharmacopoeial and Related Literature.* An Historical and Bibliographic Study. Mit einer Einfhrung Britische Pharmakopöe-Literatur des 17. bis 19. Jahrhunderts, von Erika Hickel (Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie e. V. N.F., Bd. 41). Stuttgart: Wissenschaftliche Verlagsgesellschaft MbH, 1974. xviii + 105 pp. Ill. DM 24.

Luis S. Granjel. *El ejercicio médico y otros capitulos de la medicina española* (Estudios de Historia de la Medicina Espanola, 4). Salamanca: Universidad de Salamanca, 1974. 280 pp.

Diane Johnson. *Edwin Broun Fred, Scientist, Administrator, Gentleman.* Madison, Wis.: Published for the Trustees of the Wisconsin Alumni Research Foundation by the University of Wisconsin Press, 1974. x + 179 pp. Ill. $10.00.

K. L. Kahlbaum. *Catatonia.* With an Introduction by George Mora. Baltimore, Md.: The Johns Hopkins University Press, 1973. xviii + 102 pp. $7.50.

David Large and Frances Round. *Public Health in Mid-Victorian Bristol.* (Local History Pamphlets, 35). Bristol: Bristol Branch of the Historical Association, 1974. 23 pp. Ill. 35 pence.

Erna Lesky (Editor). *Wien und die Weltmedizin.* 4. Symposium der Internationalen Akademie für Geschichte der Medizin veranstaltet im Institut fur Geschichte der Medizin der Universitat Wien, 17.-19. September 1973 (Studien zur Geschichte der Universitat Wien, Bd. 9). Wien-Köln-Graz: Verlag Hermann Bohlaus Nachf., 1974. 242 pp. Ill. DM 68.

Sir Charles Sherrington. *The Endeavour of Jean Fernel.* With a List of the Editions of His Writings. Reprint ed. Folkestone & London: Dawsons of Pall Mall, 1974. x + 223 pp. Ill. 6.50.

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* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

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THE PHYSICIAN'S CREED. An Anthology of Medical Prayers, Oaths and Codes of Ethics written and recited by Medical Practitioners Through the Ages by M. B. Etziony, [illegible] [illegible]. This collection contains a [illegible] of medical prayers, oaths, pledges, ethical [illegible], and creeds, the [illegible] of physicians throughout the ages in various civilizations. The [illegible] of the [illegible] is [illegible]. The evolution of medical ethics, [illegible] like other [illegible] of human [illegible], has been subject to [illegible], social and psychological forces. Through the [illegible] and prayers of this collection, the history of medicine is reflected [illegible] in its own way. [illegible] [illegible] trends, aims and ethical [illegible] are illustrated. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. Short biographical [illegible] are appended. *'73, 192 pp. [illegible], [illegible] il., $7.50*

MODERN CHINA AND TRADITIONAL CHINESE MEDICINE. A Symposium Held at the University of Wisconsin, Madison, edited by Guenter B. Risse, *Univ. of Wisconsin, Madison, Wisconsin. (9 Contributors)* This book constitutes the first critical analysis of the recent developments in medical techniques and public health which have taken place in the People's Republic of China. A section on acupuncture, its history, technique, and therapeutic as well as analgesic value comprise a large part of the text. Stressed throughout is the need for a rational and scientific consideration of the medical claims and accomplishments of modern China. A variety of fields such as Chinese history, medical history, anthropology and public health are discussed. Also provided are articles on the historical background of Chinese medicine. *'73, 176 pp., 1 table, $8.75*

HUMANISM IN MEDICINE edited by John P. McGovern, *Univ. of Texas, Houston, Texas,* and Chester R. Burns, *Univ. of Texas, Galveston, Texas. Foreword by* Wilburt C. Davison. *(12 Contributors)* This book is primarily a collection of essays from a symposium on humanism in medicine which posed questions as to why William Osler is revered as a medical humanist, what manifestations of humanism can be found in the history of medicine, and whether humanism has a place in the construction of goals and priorities in the medicine of today. Answers to these questions along with additional insights into the characteristics of Osler and humanism are provided by the essayists. The practice of medicine requires knowledge and skill, frequently labeled as the science and art of medicine; yet knowledge and skill are incomplete without human goals and objectives. *'73, 132 pp. (7 x 10), 7 il., $9.75*

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Volume 49
Number 2

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ORGAN OF
THE AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

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VOLUME 49 SUMMER NUMBER 2

JOHN HUGHLINGS JACKSON AND THE MIND-BODY RELATION*

H. TRISTRAM ENGELHARDT, JR.

John Hughlings Jackson (1835-1911) is well known to the general medical public. He contributed to the understanding of cortical or focal symptomatic epilepsy (*i.e.*, Jacksonian epilepsy), to the description of uncinate epilepsy, and to the appreciation of the relation between hemiplegia, aphasia, and disease of the middle cerebral artery — the middle cerebral artery syndrome. Jackson collected a wealth of clinical observations, and the eponyms in medicine honoring Jackson attest to his singular contributions as a clinician. But in particular he contributed to the theoretical foundations of neurology. This paper will examine briefly the conceptual framework within which Jackson did his work, in particular to see how he viewed the relation of mind and body. It will also display the role that this notion played in the development of his ideas, especially the crucial concept of cerebral localization.[1]

The mind-body problem, the problem of specifying the relation of mind and body, concerns the grammar of ideas. As such it may strike many in the neuro-psychological sciences as a pseudoproblem, a problem created and agonized over by philosophers, but without relevance to the tasks of th knowers and technologists of empirical reality. Nonetheless, these so-calle metaphysical problems are of importance for the empirical sciences.[1] It is we to realize that the mind-body problem is not merely, or need not merely be, metaphysical problem. The problem is much more compelling and its reali more obvious when it is appreciated as a conceptual problem. It is a proble of how to think about, or more particularly, how to talk about reality. I wis here to stress the shift in emphasis from things to concepts. The mind-bod problem becomes significant for the empirical scientist when it is recognize as a symptom of a failure to clarify the broad conceptual paradigm in terms which the sciences of psychology and neurophysiology are to be integrate The difficulty is one of distinguishing different areas of empirical researc requiring different methods as well as a way of coordinating their results. On must determine rules according to which disparate domains of reality are to b thought of in conjunction. Different rules, naturally, will have different co sequences. One will approach neurological and psychological events diffe ently depending on whether one takes them to be really distinct or reducibl one to the other.

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* This paper is drawn from my M.D. thesis, "John Hughlings Jackson and the Concept of Cerebral Localization," submitted March, 1972, to Tulane University School of Medicine Parts of this work were read at the University of Texas, Galveston, 7 October 1971.

The choice between these rules is important for the empirical scientist since the rules will determine the possibilities of what can be said and mak sense.[2] In this way categorial relations such as the one between mind an body are grammatical relations. By this I do not want to assume the position the language analyst, Ludwig Wittgenstein. I do, though, wish to suggest that as he said, "*Essence* is expressed by grammar,"[3] and that "grammar tell [us] what kind of object anything is."[4] A scientist is limited in his perspec tives by the limits of his language. Which is to say, a lot of what goes on i scientific discovery is not just acquaintance with new facts. The recognitio of new facts requires the development of new concepts and ways of relatin concepts. New facts need new concepts for their appreciation.[5] When thes cts concern broad conceptual issues, then the scientist is involved in ques-ns of ontology. That is, he must presuppose something about the general tegories of reality. The scientist thus becomes involved in molding new tterns of thought.

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[1] It is worth noting the opinion of Rudolf Carnap, one of the fathers of logical positivism. "Nothing is sai here against parallelism or the hypothesis of interaction as purely heuristic, working hypotheses . " *De logische Aufbau der Welt* (Hamburg· Felix Meiner, 1961), #22, p. 29. In many respects what this essay an Jackson have to suggest would not violate even the strict canons of logical positivist epistemology, in tha Jackson's theory of mind-body had for him a primarily pragmatic significance. The author of this paper would though, go beyond a merely pragmatic interpretation of the mind-body. It is a problem of relating concepts – *i.e.*, a categorial problem, a problem concerning the integration of different levels of meaning. See H. T Engelhardt, Jr., *Mind-Body: A Categorial Relation* (The Hague: Martinus Nijhoff, 1973).

[2] This is in a sense a Wittgensteinian turn. "To imagine a language means to imagine a form of life." Ludwi Wittgenstein, *Philosophical Investigations*, tr. G. E. M. Anscombe (Oxford: Basil Blackwell, 1963), #19

[3] *Ibid.*, #371.

[4] *Ibid.*, #373.

[5] An important part of appreciating facts, of really possessing them, is placing them within a theory; this i why a paradigm is necessary for a science See Thomas Kuhn's *The Structure of Scientific Revolutions*

I wish to suggest that such a conceptual development occurred in the olution of neurology. Most specifically, I hope to indicate that John Hugh-gs Jackson played a crucial role in this development through his interpreta-n of the mind-body relation. The thesis is that Jackson adopted a particular tion of the mind-body relation for the purpose of having, so to speak, a ammatical basis for his notion of neurology, and *a fortiori* for his concept of rebral localization. It is important to notice that the assertion concerns ckson's logic, not his personal psychology of discovery, although his new tegorial paradigm may have been personally heuristic. The importance lies the fact that a certain conceptual context was especially appropriate for ckson's concept of cerebral localization and that Jackson legitimated this ntext through supplying a particular conceptual model.

Jackson was the intellectual inheritor of a number of advances in the history f ideas.[6] First, as a successor to Franz Josef Gall (1758-1828) he drew upon all's biological concept of mental faculty. Prior to Gall, mental faculties ere primarily conceived of in terms of powers of the soul or mind. Thomas oemmerring (1755-1830), for example, was forced to speak of the localiza-on of the common or unitive sense (the *sensorium commune*), a rational sychological faculty of the Scholastics, which had its roots in Aristotelian sychology.[7] He had at hand no concept of a purely physiological integrative nter. Gall, though, resolved the mind into what he took to be empirically efined faculties of "functional action."[8] They were construed according to

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hicago: University of Chicago Press, 1962). Facts by themselves are scientificially senseless. Norwood anson pointed this out well in *Patterns of Discovery* (London: Cambridge University Press, 1965): "Know-dge of the world is not a *montage* of sticks, stones, colour patches, and noises, but a system of propositions," . 26. "Physical theories provide patterns within which data appear intelligible . . [a theory is] what makes it ossible to observe phenomena as being of a certain sort, and as related to other phenomena," p. 90.

[6] This essay is particularly in debt to Robert Young's account in *Mind, Brain and Adaptation in the 19th entury* (Oxford: Oxford University Press, 1970) and in "The function of the brain. Gall to Ferrier (1808-1886)" *Isis*, 1968, *59:* 251-258.

[7] Samuel Thomas Soemmerring, *Uber das Organ der Seele* (Königsberg: F Nicolovius, 1796).

[8] It is important to note that Gall was conscious of his role in making a physiology of the brain possible. He w himself opposing a rationalistic position based on "metaphysical dreams." Gall states, "I understand, that is still professed in the schools of physiology, that the faculties of the mind are by no means an object of hysiology; that being of a nature entirely opposed to the other functions, they are above the sphere of bservation; that we can know nothing of them . . ," *On the Functions of the Brain* (Boston· Marsh, Capen, nd Lyon, 1835), vol 3, p. 73. He conceived of himself, in contrast, as an empiricist. "The physiology of the ain is entirely founded on observations, experiments, and researches for the thousandth time repeated, on an and brute animals. Here, reasoning has had nothing more to do with it, than to seize the results, and deduce e principles that flow from the facts . .," *ibid.*, vol. 6, p. 310

the model of instincts.[9] Under this model the old faculties of "attention perception, memory, judgment, imagination" became nothing else tha "modes of action of every one of the fundamental faculties."[10] Gall's insigh was his appreciation that one of the reasons why previous attempts at th cerebral localization of mental functions failed lay in the fact that "they sought . . . an organ for perception, memory, judgment, imagination, understanding, will, attention, and so on."[11] Such faculties were only "abstractions, generalities." Gall, on the other hand, conceived of the nervous syste biologically, as an organ system such as the digestive system, which playe certain physiological functions in the economy of the organism.[12] In short Gall contributed an interest in cerebral localization and a notion that suc localization involved the analysis of the biological functions of the brain.[13]

These concepts came to Jackson primarily through Herbert Spence (1820-1903), though there is also some evidence of another line of phrenological influence upon Jackson passing through Jean Baptiste Bouillau (1796-1881) and Brown-Séquard (1818-1894).[14] It was Spencer who added a evolutionary or clearly adaptational dimension to the notion of the brain as an organ of human adjustment to the environment.[15] In doing so he furthered replacement of rational psychological faculties by functions of integration and adaptation. "Instinct, Reason, Perception, Conception, Memory, Imagination, Feeling, Will, &c., &c., can be nothing more than either conventional roupings of the correspondences; or subordinate divisions among the various operations which are instrumental in effecting the correspondences. However widely contrasted they may seem, these various forms of intelligence cannot be anything else than either particular modes in which the adjustment of inner to outer relations is achieved; or particular parts of the process of adjustment."[16] Spencer offered, in addition to this concept of adjustment or adaptation, a concept of the cerebral localization of these functions. In Jackson's first paper on localization, after rejecting a strict localization, he states: "The foregoing does not imply that there is no localisation . . . in the sense phrenologists suppose."[17] He then adds in a footnote, 'The principle of localisation I have adopted seems to be the one which Herbert Spencer has put forward. He has given an illustration which is, I think, essentially the same as the one I have given in the text. Spencer says (*Principles of Psychology*, p. 607): — 'No physiologist who calmly considers the question in connexion with the general truths of his science can long resist the conviction that different parts of the cerebrum subserve different kinds of mental action. Localisation of function is the law of all organisation whatever: separateness of duty is universally accompanied with separateness of structure, and it would be marvellous were an exception to exist in the cerebral hemispheres.' "[18]

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[9] "The term *instinct*, therefore, applies to all the fundamental powers, and the instinct must have as many organs as there are fundamental powers," *ibid*, vol. 6, p 261 "The intellectual faculties also are, in most cases, exercised instinctively," *ibid.*, vol 6, p 264

[10] *Ibid.*, vol 3, p 83

[11] *Ibid*, vol. 3, p. 82

[12] "We know that the stomach digests; that the food is transformed into chyle and into blood " *Ibid*, vol. 3, p. 74. "Well, this is precisely as much as we know in regard to the intellectual faculties and moral qualities that the intellect and the will, the perception, the memory, the judgment, the imagination, the attention, etc., are sound, changed, enfeebled, exalted, or void, according to the condition of the brain," *Ibid.*, vol 3, p. 75

[13] Further, Gall appreciated the importance of the development of a new view of mind, body, and their relation for the discovery of new facts. "I owe almost all my anatomical discoveries to my physiological and pathological conceptions; and it is only from these, that I have been able to convince myself of the perfect accordance of the moral and intellectual phenomena, with the material conditions of their manifestation " *Ibid.*, vol 3, p. 91. Though he failed to carry out the project of a true neurophysiology, he sensed that such a task required a new way of construing the central nervous system and its attendant phenomena.

[14] *Vide* Samuel H. Greenblatt, "Hughlings Jackson's first encounter with the work of Paul Broca," *Bull. Hist. Med*, 1970, *44*· 558.

[15] "Spencer's general theory of evolution and the biological, evolutionary basis of his psychology grew out of the arguments for specialization of functions which he elaborated in the context of his phrenological interests. He later freed his evolutionary psychology from phrenology, and the belief in cerebral localization (which was all that he retained from his earlier allegiance), was based on the general theory of evolution However it should be noted that this new basis for a remnant of his phrenological interests had itself grown out of the theory it replaced " Young, *op cit.* (n. 6 above), p. 161.

Further, this organizational idiom was developed along with and through the influences of the associative psychology of Spencer. For example, Spencer suggested that "the associability of feelings with those of their own kind, group within group, corresponds to the general arrangement of nervous structures into great divisions and sub-divisions."[19] The associative model thus provided a paradigm for thinking about coordination of nervous functions and supported the concept of the integration of functions. In particular, the brain was appreciated as an organ of integration, most specifically of motor functions. Sir Charles Bell (1774-1842) had recognized the sensory-motor nature of the spinal cord and in so doing introduced the sensory-motor idiom for the description of the nervous system.[20] And Thomas Laycock (1812-1876) in his theory of reflex action tended to broaden the application of this idiom to include the cerebral ganglia.[21] But the sensory-motor idiom wa further extended by Spencer and in particular the motor dimension wa emphasized. The functions of the nervous system were specified by Spence as recipio-motor, libero-motor, and dirigo-motor.[22]

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[16] Herbert Spencer, *The Principles of Psychology* (London: Longman, Brown, Green, and Longmans, 1855), p. 486.

[17] "Disorderly movements of chorea and convulsion, and on localisation," *Med. Times & Gaz., Lond.*, 1867, *2*: 669.

[18] *Ibid.*

[19] Herbert Spencer, *The Principles of Psychology* (New York: D. Appleton, 1897), vol 1, p 257.

[20] "I have now only to add, that these opinions and experiments have been followed up to the satisfaction of all Europe. It has been acknowledged that the anterior roots of the spinal nerves bestow the power of muscular motion; and the posterior roots sensibility." Charles Bell, *An Exposition of the Natural System of the Nerves of the Human Body* (London: A. & R Spottiswoode, 1824), pp. 40-41

In short, the central nervous system was seen as an organ that functions b integrating sensory stimuli (appreciated physiologically as motions) an motor reactions. This involves a crucial transformation. The ration psychological concept of faculties had developed into the concept o physiological functions concerned with the integration of sensory input wit motor output. In the words of Alexander Bain (1818-1903), an associativ psychologist and pupil of the phrenologists,[23] the neurological processes ar anatomical substrata of psychological processes, "the machinery of mind."[2 It was in particular for this concept that Jackson acknowledged a debt to Bain "To Professor Bain I owe much. From him I derived the notion that th anatomical substrata of words are motor (articulatory) processes."[25] Thi concept was developed further under the influence of Spencer's evolutionar doctrines concerning mental life and the nervous system. It had a profoun influence on Jackson. Jackson put it this way:

> Before I go further I have certain obligations to acknowledge. I am under very heav obligations to Herbert Spencer. I shall acknowledge these obligations in detail in late chapters . . . . Let me at once give a quotation from his *Psychology* with regard t evolution of nervous centres, a subject on which I have much to say: "In the function of the successively higher vertebrate centres, reaching their climax in the huma being, we see well exemplified the law of development of functions in general" *(Firs Principles*, p. ii, Sec. 142). "This progress from coordinations that are small and simpl to those that are larger and compound and to those that are still larger and doubl compound, is one of the best instances of that progressive integration of motion simultaneously becoming more heterogeneous and more definite which characterise evolution under all its forms" *(Principles of Psychology,* vol. i, p. 67).[26]

John Hughlings Jackson inherited the elements of a comprehensive concep cerebral localization and of a theory of the mind-body relation which it esupposed. (1) Gall had provided a biological concept of cerebral localiza- on; (2) Herbert Spencer had construed this biological dimension within the eory of evolution, and (3) both Spencer and Alexander Bain had interpreted e functioning of the faculties in terms of associative psychology. But most mportant, this evolution of ideas led to viewing the relationship of mind and ody as a psychophysical parallelism. If the mind was to be understood rough the adaptive integrative functions of the nervous system, then the ervous system could be considered a system of functional adaptation and ntegration complete in its own right. This marks a dramatic shift in the ppreciation of the status of the nervous system. One is no longer viewing the ervous system as the organ of the soul, but as the organ of sensory-motor ntegration.[27] The possibility of autonomy for the neurological sciences is mplicit in this position, which was held by both Herbert Spencer and Alexan- er Bain. For each of them mind and body had separate, though coordinate, treams of events; the streams were, so to speak, complementary. As Bain put , "the only tenable supposition is, that mental and physical proceed together, s undivided twins,"[28] so that mental and physical reality constitutes "a *ouble-faced unity.*"[29]

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[21] " the brain, although the organ of consciousness, was subject to the laws of reflex action, and that i this respect it did not differ from the other ganglia of the nervous system. I was led to this conclusion by th general principle that the ganglia within the cranium, being a continuation of the spinal cord, must necessaril be regulated as to their reaction on external agencies by laws identical with those governing the spinal gangl and their analogues in the lower animals." Thomas Laycock, "On the reflex function of the brain." *Brit & For Med Rev., Lond.*, 1845, *19* 298. Jackson quotes this passage at least twice *(Selected Writings of Joh Hughlings Jackson*, ed James Taylor [London: Staples Press, 1958], vol. 1, p. 37 and p. 167) besides ofte acknowledging his debt to Laycock.

[22] Spencer, *op cit* (n. 19 above), vol. 1, p. 49.

[23] "Bain was confessedly impressed and interested by phrenology " K. M. Dallenbach, "The history and derivation of the word 'function' as a systematic term in psychology," *Am J. Psychol.*, 1915, *26*. 482.

[24] Alexander Bain, *The Senses and the Intellect* (London· Parker and Son, 1855), p. 62.

[25] Jackson, *op. cit* (n. 21 above), vol 1, p. 167.

[26] *Ibid.*

In developing his notion of neurology Jackson considered that he was making a pragmatic choice between three options. The first was the theory 'that mind acts through the nervous system," which was the traditional hysiological model of Descartes. Second was "that activities of the highest entres and mental states are one and the same thing, or are different sides of ne thing," which appears to have been Bain's position. The third option is he one Jackson chose — "that (a) states of consciousness (or synonymously tates of mind) are utterly different from nervous states of the highest centres; b) the two things occur together, for every mental state there being a correla- ive nervous state; (c) although the two things occur in parallelism, there is no nterference of one with the other,"[30] In short, Jackson opted for a strict arallelism of mind and body which he termed "the Doctrine of Concomi- ance." Of particular interest is his motivation for this explicit treatment of a hilosophical problem and the part that the doctrine of concomitance played n his development of neurology.

To begin with, Jackson saw the doctrine of concomitance as a way of freeing neurology from metaphysical problems.[31] He engaged in philosophy, so to speak, in order to free neurology from certain philosophical or conceptual quandaries. He saw himself forced to this endeavor by three considerations. First, he saw an essential danger implicit in confusing physiological and psychological descriptions. Failure to distinguish clearly between psychological and physiological mechanisms made it difficult to establish neurological models. This failure made it difficult by seeming to substitute a psychological cause for a physiological one, thus construing physiological events within a psychological framework. Jackson referred to this as a "psychological bias."[32] Jackson gives this example of what he means: "The current explanation of the post-epileptic comatose patient's immobility is, that he does not move, because he is unconscious. This, I submit, is a metaphysical explanation. We want, in scientific matters, realistic explanations. My belief is that the post-epileptic immobility is paralysis. . . . No man was ever unconscious without there being at the same time some physical change in at least the highest arrangements of his highest centres."[33] In other words, if one were to seek a psychological cause for a physiopathologic process, such as epilepsy, Jackson's contention was that one would be failing to do his physiological homework — namely, to find a physical mechanism for physical events. He was not disparaging the importance of seeking what could be called the psychological markers of physiological events. Rather, Jackson was making a basic methodological point. If physical enterprises, such as medicine and neurology, are to succeed, they must remain consistently materialistic in handling their data.

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[27] Even Gall still spoke of the brain as an instrument. ". . . I have proved, that the instincts, propensities, and aculties are innate, in animals, as well as in man, and that, in this life, the manifestation of none of these ispositions is possible, without the aid of material instruments." Gall, *op. cit.* (n. 8 above), vol. 3, p. 1.

[28] Alexander Bain, *Mind and Body* (New York: Appleton, 1875), p 131.

[29] *Ibid.*, p. 196.

[30] Jackson, *op. cit.* (n. 22 above), vol. 2, p. 84.

It is in this vein that one is to understand Jackson's description of the nervous system "as a sensori-motor machine,"[34] which he proffers for the purpose of clearing up difficulties "in studying disease."[35] Jackson was employing a methodological materialism. That is, he was interpreting henomena materialistically, in order to isolate truly neurological echanisms. He is quite clear about his intentions. On the one hand, he is oved by theoretical considerations concerning the integrity of physiological heories and their integration into general physical theory. If one were to say hat the mind causes physical states, one would be introducing alien elements nto an otherwise closed system, namely the physical world. As Jackson emarked, this would "imply disbelief in the doctrine of the conservation of nergy."[36] Charles Mercier gives a personal insight into Jackson's commitents in this regard. "He said once that if he could be convinced of an nteracting dualism he should abandon the study of the nervous system; his mplication being that dualism means the negation of law. All expressions that mply interaction or community of nature between body and mind, such as psycho-motor' or 'the centre for ideas', he called 'scientific blasphemy'."[37] n the other hand, Jackson recognized the purely pragmatic importance of his ppreciation of the nervous system. It acted heuristically as an impetus to find 'materialistic explanations of physical inabilities."[38] In short, the doctrine of oncomitance allowed Jackson to study the nervous system in isolation and ithout an admixture of psychological concerns.

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[31] Indeed, Jackson had a strong aversion to metaphysics and saw it as a real burden upon science. He repeatedly used "metaphysical explanation" as an opprobrium (*e.g.*, Jackson, *op. cit.* [n. 21 above], vol 2, p 62 and p. 342) In fact, he was reticent, for example, to accept without qualification George H Lewes's somewhat metaphysical account of mind-body in terms of a parallelist's description specified through a double aspect theory. " ' . . all the evidence points to the very different fact that the neural process and the feeling are one and the same process viewed under different aspects. Viewed from the physical or objective side, it is a neural process, viewed from the psychological or subjective side, it is a sentient process' (*Problems of Life and Mind*, vol. ii, p. 459) Mr. Lewes's view does not conflict with mine *in this inquiry*. For all I have to urge in this paper is, that we should try to determine the anatomical nature of the neural arrangement, and this can be done regardless of any hypothesis as to the relation betwixt the neural process and the feeling." Jackson, *op. cit* (n 21 above), vol. 1, p. 42.

[32] *Ibid* , vol. 2, p 9

[33] *Ibid.*, vol 2, p. 59.

[34] *Ibid.*, vol. 2, p. 29

[35] *Ibid* , vol. 2, p. 16.

Second, the doctrine of concomitance was for Jackson a way of freeing hysiology from the influences of faculty psychology. This brings us back to he initial remarks concerning Jackson's antecedents. In acknowledging his ebt to Spencer and to the theory of evolution, Jackson at the same time ecognized that a faculty psychology militated against a physiological undertanding of the functions of the nervous system. To begin with, a faculty sychology introduced a mixture of physical and psychological causality. The ill, for example, was spoken of as acting upon or through the body, the body hought of as a means (*e.g.*, "the will produces contractions of the mus- les"). This is an example of the confusion present in what Jackson termed 'psychologico-materialistic" theories, which as he observed tended to "hiner progress in neurology."[39] Faculty psychology had the further disadvanage of failing to focus attention upon sensory-motor associations — a field hat physiology was competent to study. In contrast, by construing the unctions of the brain as sensory-motor associations, Jackson made a decisive dvance in appreciating the nervous system through truly physiological arameters. By ceasing to make direct reference to volition, reason, and so forth, Jackson could frame questions that admitted of directly quantifiable answers.

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[36] *Ibid.*, vol 2, p 86

[37] Charles Mercier, "Recollections," in John Hughlings Jackson, *Neurological Fragments* (London: Oxford niversity Press, 1925), p 44

[38] Jackson, *op cit.* (n. 21 above), vol. 2, p. 86.

[39] *Ibid.*, vol 2, p. 28, footnote.

Jackson viewed man in terms of motion and thus as a motor mechanism. The unifying function of the concept "faculty" was thus taken over by the concept of "association" or "integration." Instead, for example, of organizing data around the concept of will, the data were organized around the concepts of certain sensory-motor performances such as speech.[40] The parameters of interest became more explicit and could be immediately expressed in physical terms. That is, Jackson moved from potentially introspective organizing concepts such as will and reason to organizing concepts whose features were expressed in directly measurable motor performances, such as specific muscular movements and coordinations.[41] For Jackson, even consciousness itself was to be understood neurologically. Consciousness was a special accompaniment of particular neural integrations and initiations of movements. Jackson emphasized this: "I particularly wish to insist that the highest centres — physical basis of mind or consciousness — have this kind of constitution, that they represent innumerable different impressions and movements of all the parts of the body. . . ." To which Jackson added, "If the doctrine of evolution be true, all nervous centres must be of sensori-motor constitution."[42] This does not mean that Jackson stopped talking about reason, will, etc., but that they assumed a metaphorical "as if" significance for neurology.[43] Reality for neurology was at last defined physically, and man in that respect was a "machine."[44]

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[40] Early in his career Jackson did speak of "faculties" in the old, rational psychological fashion. "Here the radical tendency, representing numbers of cases, urges me to conclude that the Faculty of Language resides on the left side of the brain." "Loss of speech: its association with valvular disease of the heart, and with hemiplegia on the right side," *Clin. Lect & Rep Lond. Hosp.*, 1864, *1* 463 Jackson, though, soon began to correct this and by 1878, through his theory of concomitance, was able to make the crucial distinction even in this very difficult area "Loss of speech is therefore the loss of power to propositionise . . We do not mean, by using the popular term power, that the speechless man has lost any 'faculty' of speech or propositionising . . . There is no 'faculty' or 'power' of speech apart from words revived or revivable in propositions, any more than there is a 'faculty' of co-ordination of movements apart from movements represented in particular ways . . . It is well to insist again that speech and words are psychical terms, words have of course anatomical substrata or bases as all other psychical states have " Jackson, *op cit.* (n. 21 above), vol. 2, p. 160

[41] "The highest centres are only exceedingly complex, and special sensori-motor nervous arrangements representing, or co-ordinating, in the ways we shortly go on to show, the whole organism." Jackson, *op cit.* (n 21 above), vol. 2, p. 41

[42] *Ibid.*, vol. 2, p 63.

[43] "Now, not believing in the existence of the four separate faculties, but holding that will, memory, reason, and emotion are simply artificially distinguished aspects of one thing, a state of consciousness, I say that, instead of four centres, there are highest centres; and that, during activity of these centres, will, memory, reason, and emotion are simultaneously displayed; or, in strictly equivalent words, that there arises a state of consciousness " Jackson, *op cit* (n 21 above), vol. 2, p. 66 "There are states of object consciousness which we artificially 'break up' into the four elements ('faculties')." *Ibid.*, vol. 2, p. 92.

[44] *Ibid.*, vol 2, p 72.

Finally, the doctrine of concomitance insured against a reduction of psychological events to physiological processes. It allowed Jackson to develop his view of neurology without denying the possibility or legitimacy of psychology in the traditional sense. "The evolutionist can take a brutally materialistic view of disease of any part of the nervous system, for the reason that he does *not* take a materialistic view of mind — does not confound nervous states with psychical states."[45] Indeed, psychological events had for Jackson an autonomy, or coherence of their own, although they were not, in his opinion, the proper study of medicine or neurology. To quote Jackson, "Our concern as medical men is with the body. If there be such a thing as disease of the mind, we can do nothing for it."[46] One must append to this that Jackson did not himself eschew psychological speculation and devoted time to doing an analysis of the structure of consciousness.[47] He was interested in the nature of self-consciousness and the legitimacy of referring to "unconscious processes."[48] He made, moreover, important suggestions concerning psychopathological events. He wondered, for example, if an understanding of dreams was not integral to an understanding of insanity.[49] Freud himself acknowledged Jackson's suggestions in this regard, adding in a footnote to the *Interpretation of Dreams* a quotation from Jackson: "Find out all about dreams and you will have found out all about insanity."[50] Jackson also was interested in the psychology of joking as revelatory of basic psychological processes.[51]

Thus Jackson used the doctrine of concomitance to go both ways — to isolate neurology and to isolate psychology. He was thoroughgoing in his project of preventing the confusion of physiology and psychology, while still interested and able to coordinate the two. An excellent example of such coordination is his study of the aurae of epilepsies. They were used by Jackson as psychological markers of pathophysiological processes.[52] "On the basis of mere concomitance, mental symptoms (synonymously abnormal states of consciousness) are, strictly speaking, only signs to physicians o what is not going on or of what is going on wrongly in part of a patient's material organisation."[53] In other words, his doctrine of concomitance allowed Jackson to make some important distinctions. And these distinctions in turn allowed him to consistently treat neurology as a physical science and psychology as science of mind, while still attending to their important interrelations. "There is no physiology of the mind any more than there is psychology of the nervous system."[54]

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[45] *Ibid.*, vol 2, p. 41.

[46] *Ibid.*, vol 2, p. 85

[47] He attempted to resolve consciousness into two poles: an object and a subject consciousness. See for example Jackson, *op cit* (n. 22 above), vol. 2, pp. 93-94.

[48] "I take consciousness and mind to be synonymous terms (Section 1), if all consciousness is lost all mind is lost (Section 2). Unconscious states of mind are sometimes spoken of, which seems to me to involve a contradiction " *Ibid.*, vol. 2, p. 85

[49] *Ibid* , vol 2, p. 5.

[50] Sigmund Freud, *The Standard Edition of the Complete Psychological Works*, tr. James Strachey, vol. 5: *The Interpretation of Dreams* (London: Hogarth Press, 1953), p. 569

[51] Jackson, *op. cit* (n 21 above), vol 2, "An Address on the Psychology of Joking," pp. 359-364

[52] "This means that it is the place of onset ('the signal symptom' which localises) [i e., aura]; it points to the particular part of the 'motor region' of the cells of which part the discharging lesion is made up " *Ibid* , vol. 1, p 427.

These conceptual developments are particularly apparent in the case of the concept of cerebral localization — which is in a sense a focal point of the mind-body relation. The distinctions which the doctrine of concomitance afforded allowed Jackson a singularly physiological concept of cerebral localization.[55] Previously, cerebral localization was the physiological localization of psychological processes. It must be remembered that Broca had still spoken of cerebral localization as the localization of mental faculties. Jackson, though, was able to refer to cerebral localization without making reference to psychological events. For Jackson it was the coordination of sensory input and motor output that was to be localized. Cerebral localization was then to be the physiological representation of physiological processes. One can say without exaggeration that this marked the real beginning of neurology proper. Most central concepts could now be understood fully in physical terms. The transformation of the concept of faculty had its issue here.

This development was anticipated by Charles Bell and Francois Magendie (1783-1855) when they described the function of the spinal cord in sensory-motor terms. As Magendie suggested, "Sensation and voluntary motion are the most widely-extended offices of the cerebro-spinal system."[56] But there was some hesitation in applying this model without restriction to the "higher functions" of the central nervous system. Here, though, the model was made universal without reservation and was extended in detail to the entire nervous system. Moreover, the notion of function, as used by neurology, became thoroughly neurological. This meant that what was previously assumed from psychology became subject to neurological investigation. This step allowed critical empirical scientific interest to focus upon the bases of neurology because the bases had at last become physiological. The shift is momentous. Before Gall, the functions of the brain were discussed by means of concepts alien to and beyond the competency of neurology: namely, rational psychological faculties. With Jackson the reconceptualization of function and faculty became complete. Jackson was able to offer a purely physical model. As Jackson put it: "I am supposing the nervous system to be a sensori-motor mechanism, from bottom to top; that every part of the nervous system represents impressions or movements, or both."[57] "Hence it is not enough to say that, for every psychical state there is a correlative physical state of cells and fibres of the highest centres . . . . We should say of cells and fibres of those centres making up *sensori-motor nervous arrangements*, [that they are] nervous arrangements representing (re-re-representing) impressions and movements of parts of the body . . . ."[58]

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[53] *Ibid.*, vol. 1, p. 417.

[54] *Ibid.*

[55] One should note that Jackson denied that he was a localiser (Jackson, *op cit.*, [n. 21 above], vol. 2, p 34). What he meant, though, was that he denied any rigidly discrete localization of function, preferring a relative localization, or predominance of one function in one area of the brain. "I am neither a universaliser nor a localiser" *Ibid.*, vol. 2, p. 35 He saw his doctrine of "localization" to be one that was truly compatible with the theory of evolution "The formula of evolution states a doctrine of localisation, and one very different from the current one. Integration, a very important factor, is ignored by the current doctrine." *Ibid*, vol 2, p. 80, footnote.

[56] Francois Magendie, *An Elementary Treatise on Human Physiology*, tr. John Revere, 5th ed. (New York: Harper & Brothers, 1845), p. 172.

This shift in ideas caused Jackson to employ the word "anatomical" with a novel meaning that uniquely stressed the fact that he was developing a new way of talking about the nervous system. "To give an account of the anatomy of any centre is to show what *parts of the body it represents*, and the ways in which it represents them."[59] "Coordination or representation is always sensori-motor . . . ."[60] The functions of the brain were no longer primarily described teleologically, through reference to serving psychological abilities. They were described by means of structural relations through time via the concepts of "integration," "coordination," and "representation." The function of the brain was to coordinate and integrate the body through a physiological representation of the body's sensory-motor activities. Jackson was not forced, as Gall was, to speak of the brain secreting consciousness in speaking of the brain's functions.[61] An encompassing physiological framework was at hand. Again, a sign of this is found in Jackson's speaking of levels of anatomical representation[62] or integration.[63] Speaking in terms of levels of integration made it difficult to speak in the language of a faculty psychology. It indicated a firm commitment to construing the functions of the brain in terms of sensory-motor integrations and coordinations. The Jacksonian concept of anatomical representation, so to speak, brought the Bell-Magendie law to a broader use. The higher centers of the brain were re-representations or re-re-representations of the sensory-motor functions. The model of the brain's functions became then that of progressive integration of the sensory-motor functions in ever more coordinated representations of the organism's activity. A faculty language was no longer appropriate.

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[57] Jackson, *op cit.* (n 21 above), vol 2, p 78.

[58] *Ibid*, vol 2, p 100.

[59] *Ibid*, vol. 2, p 96, footnote

[60] *Ibid*, vol. 2, p. 83

[61] Gall, *op cit.* (n 8 above), vol 3, pp 71-73

[62] Jackson, *op. cit* (n 21 above), vol. 2, pp. 78-79

[63] *Ibid*, vol 2, p 80.

By employing a certain model of the mind-body relation, Jackson gave a simpler account of the brain's functions. It allowed him to employ physiological concepts such as "integration," "coordination," and "representation" without confusion with psychological issues. Jackson chose creatively between models of the mind-body relation in order to develop a neurology that possessed a conceptual integrity. He also chose the doctrine of concomitance in order to give a foundation for a physiological account of the functions of the brain unencumbered by psychological concepts. Freed from such concepts, an interactionist theory of mind-body would no longer suggest itself through the presence of "faculty," rational psychological terms. A purely physiological account was at hand. Further, to some extent Jackson's account challenged a "Cartesian" view of mind such as was held by Flourens.[64] If the nervous system could be described in its own terms, then psychological events could only be correlated with, but would not "disturb" physiological processes.[65] On the other hand, a reductionist materialism was not requisite if there were no stray psychological concepts in an otherwise physiological discourse. If there were no interaction of mind and body, such concepts in that context would indeed have been in need of assimilation to a physical idiom and thus would have demanded a move such as a reduction. But Jackson was not dependent on such psychological concepts for his neurology and could moreover give them a domain of their own. To recapitulate, by assuming the theory of concomitance Jackson (1) was able to isolate neurology and treat it as a physical science independent of psychology, and, as a corollary, (2) was able to eliminate the psychological notion of faculty and replace it by physiological concepts such as integration and coordination. At the same time he (3) was able to preserve the possibility of psychology as a coordinate yet autonomous science. In short, Jackson resolved many crucial issues that concern the analogues in neurology of the mind-body problem.

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[64] "Now, the consciousness which gives me the *unity* of the *moi*, gives me not less assuredly the continuity of the *moi* Descartes' admirable words are: 'I find that there is in us an *intellectual memory.*' The consciousness tells me that I am *one*, and Gall insists that I am *multiple*, the consciousness tells me I am *free*, and Gall avers that there is no *moral liberty* . . . " P. Flourens, *Phrenology Examined*, tr Charles de Lucena Meigs (Philadelphia: Hogan & Thompson, 1846), p. 123.

In passing, it is worth noting that the anti-Cartesian aspect of Jackson's theory has not been appreciated by Walter Riese, who has written most concerning Jackson's theory of concomitance. He appears most struck by what he terms the "obvious Cartesian element in Jackson's doctrine" ("Hughlings Jackson's doctrine of consciousness," *J. Nerv. Ment. Dis*, 1954, *120*. 331) holding that "a Cartesian element is undeniable in this doctrine, asserting that states of consciousness are utterly different from nervous states of the highest centres." "Changing concepts of cerebral localization," *Clio Medica*, 1967, *2*: 224 In part, these statements reflect Riese's viewing a Leibnizian, parallelist account of the mind-body relation as merely a species of the Cartesian position. This tends to obscure the important difference between an interactionist and a parallelist account of the mind-body relation. One of Descartes' central theses was that of the interaction of mind and body One is not a Cartesian simply in virtue of a clear distinction between mind and body. Such a distinction was forged by Plato and held by many Scholastics Finally, Jackson's theory of mind, in particular his analysis of subject and object consciousness, was not Cartesian, but, if anything, somewhat Kantian *Op cit.*, vol 2, p. 96.

[65] "But I submit that forms of thought, even if supernaturally given, must have some physical basis " Jackson, *op cit* (n. 21 above), vol. 2, p 111

In summary, Jackson gave to neurology a critical awareness of the importance of basic ideas. He did this without involving his critique in metaphysics. He was rather thoroughly pragmatic. Jackson adopted a way of talking about mind and body because it made it easier to talk precisely and without confusion about issues in neurology. This pragmatic approach towards the relation of psychological and physiological events and processes is illustrated by Jackson's suggestion that we adopt his doctrine of concomitance even if it does not accurately portray reality.[66] His theory of mind and body was primarily a conceptual framework assumed in order "that we may study the most complex diseases of the nervous system more easily."[67] As Sir William Broadbent noted, it was a way of guiding the neurologist to "constantly bear in mind that in disease it is structure and function of nervous centres with which [one has]to deal and not mental faculties . . . ."[68] Jackson provided a theoretical milieu. He pioneered a consistent, encompassing, purely physiological view of the nervous system that could be entertained without the need for denying the reality of mind. To conclude, by again quoting Broadbent, "We accord to [Jackson] unanimously the first place among those who have contributed to neurology as a science . . . . There are two kinds of knowledge, one consisting in the accumulation and verification of facts and their arrangement in their natural relation; the other of a more profound character, comprehending the underlying significance of phenomena. It is this last to which Hughlings Jackson has so largely contributed."[69]

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[66] In referring to Jackson as a Cartesian, Walther Riese (see footnote 64) also fails to do justice to Jackson's non-metaphysical pragmatic attempt to forge new relations between concepts in order to be able to function better as a scientist. Jackson's move is a methodologically heuristic move. In this vein Jackson recommends that even if the doctrine of concomitance is false, one should "provisionally accept [it] as an artifice." Jackson, *op. cit* (n. 21 above), vol. 2, p. 85. His concerns are in this respect radically different from either Leibniz or Descartes.

[67] Jackson, *op cit* (n. 21 above), vol. 2, p. 85.

[68] "Hughlings Jackson as pioneer in nervous physiology and pathology," *Brain*, 1903, *26* · 323.

[69] *Ibid.*, pp. 306-307.

THE TUBERCULOSIS MOVEMENT AND THE RACE QUESTION, 1890-1950*

MARION M. TORCHIA

The isolation of the tuberculosis bacillus by Robert Koch in 1882 provided a basis for the hope that consumption could be eradicated and stimulated a world-wide campaign against the disease. While bacteriologists commenced a search for a vaccine or antibiotic weapon, medical professionals and laymen organized an anti-tuberculosis movement utilizing the available tools of medicine and hygiene. In the United States this movement developed in three closely interdependent phases: a sanatorium-building effort, a public health program to control tuberculosis in the mass of the population by means of governmental action, and a vigorous voluntary movement to form anti-tuberculosis societies.

At the very outset of their campaign, tuberculosis workers in the United States were confronted with a distressing set of facts regarding the condition of black people. At the turn of the century, the nation's nine million blacks, living mostly in the rural South, were segregated and impoverished under the Jim Crow system, and their annual mortality from tuberculosis was well over 450/100,000, three times the white rate.[1] The ensuing years would see a mass migration northward and to the cities, but no substantial change in the black-white mortality ratio.[2] Discussion of the meaning of this disparity commenced at once, and a great deal of ink was spilled in a protracted debate over the question of innate susceptibility versus environmental causation.[3] Of more tangible benefit was the practical discussion that took place as leaders of all phases of the movement — sanatorium builders, public health officials, and workers in the voluntary associations — tried to decide what to do about treating blacks. The solutions they reached were determined both by the medical exigencies of tuberculosis therapy and by social considerations. It is the purpose of this essay to trace the development of race policy during the movement's most active years, roughly from the founding of the first sanatoria in the 1880s to the advent of the antibiotic therapy around 1950.

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* Presented at the 47th annual meeting of the American Association for the History of Medicine, Charleston, South Carolina, May 4, 1974.

[1] *Negro Population 1790-1915,* vol. 1 of 2 vols , Dept of Commerce, Bureau of the Census (Washington: Gov't Printing Off., 1918, New York: Kraus Reprint Co., 1969), pt. 1, "Growth and Geographic Distribution, 1790-1910," pp. 21-60, pt. 4, "Vital Statistics," ch. xiv, "Mortality in the Registration Area," pp. 298-372, esp. table 18, "Negro and White Deaths from Specified Causes. 1913 and 1910," p. 314.

[2] Regarding the migration and its effects, see *Negroes in the United States 1920-32,* vol. 2 of 2 vols. Dept of Commerce, Bureau of the Census (Washington: Gov't Printing Off , 1935; New York: Kraus Reprint Co., 1969), ch. ii, "Geographic Distribution and Increase," pp 2-12, ch. v, "Urbanization," pp 48-67. By 1950 the general tuberculosis mortality was down to 21.7/100,000, the rate for whites was 16.6, that for nonwhites 67.5. See Robert D. Grove and Alice M. Hetzel, *Vital Statistics Rates in the United States, 1940-1960,* National Center for Health Statistics, USDHEW-USPHS Pub. No 1677 (Washington: Gov't Printing Off , 1968), table 62, p 366. On changes in death rate and the disparity in racial incidence, see René and Jean Dubos, *The White Plague Tuberculosis, Man, and Society* (Boston Little, Brown, 1952), pp. 233, 267; and Anthony M. Lowell, *Tuberculosis Mortality and Morbidity and Its Control.* Part 1 of *Tuberculosis* (Cambridge, Mass. Harvard Univ Press, 1969) p. 17. Louis I Dublin, *A 40-Year Campaign against Tuberculosis: The Contribution of the Metropolitan Life Insurance Company* (New York Met. Life, 1952), pp. 57-62, 98-100, compares the rates of

The earliest sanatorium builders, exemplified by Drs. Edward L. Trudeau, Vincent Y. Bowditch, and Lawrence F. Flick, were more concerned about demonstrating the effectiveness of their therapy than about solving social problems. Dr. Trudeau's autobiography contains no discussion of race, though he did feel compelled to explain his isolation from the emerging public health movement, saying that he was occupied with keeping his institution in existence long enough to demonstrate its value to the outside world.[4] His Adirondack Cottage Sanitarium in Saranac Lake was small and selective, admitting only incipient cases or those with a good prospect of recovery.[5] Blacks are not mentioned in its reports. Dr. Vincent Y. Bowditch of Massachusetts shared Dr. Trudeau's goals. Both his Sharon Sanitarium near Boston and the Massachusetts State Sanatorium at Rutland, which he helped found, selected incipient cases. In addition every effort was made to deny that

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the Metropolitan's black and white industrial policy holders, 1911-1951. Observations of the disparity in local rates include John B. Hall, "Negro death rate in Boston," *J. Nat. Med Assn.*, 1926, *18*. 133-35, and Godias J Drolet and Lowa M. Dorr, *Reference Statistics, Tuberculosis Mortality and Morbidity in New York City, 1898-1930* (compiled from reports of Bureau of Records and Bureau of Preventable Diseases, New York City Dept. of Health, under research service of N Y. Tuberculosis and Health Assn , Jan. 1932), p. 9 The District of Columbia Tuberculosis and Respiratory Disease Association followed the death rates in its annual reports beginning in 1908. Between 1900 and 1925 the white rate dropped to one-fourth the original figure while the black rate was only halved (Triennial report 1924-25-26). By 1957 the society had ceased to speak of death rates and instead reported new case rates In "Tuberculosis in Greater Washington: Facts, Figures, Problems, 1957," the society reported that new cases were equally divided between blacks and whites, but failed to give the rates per unit of population (pp 12-13) It was pointed out, however, that cases were concentrated in the lower income groups and in the ghetto areas (pp 14-17). On Oct. 22, 1972, the society reported in the Washington *Post* ("Metro," p 1) that black males got tuberculosis at four and a half times the rate of white male and three times the national rate

[3] It is sufficient here to suggest two balanced treatments of the question, the first by a pair of white medical researchers and the other by a black doctor-scientist: Dubos, *The White Plague*, pp 193-96; H. M. Payne, "The Problem of Tuberculosis Control among American Negroes," *Am Rev. Tuberc* , 1949, *60* 332-42.

[4] Edward Livingston Trudeau, *An Autobiography* (New York: Lea & Febiger, 1916), pp. 243, 303.

[5] Saranac Lake, New York: Adirondack Cottage Sanitarium, Annual Reports, 1st thru 32nd, 1885-86 thru 1915-1916.

these were charity hospitals.[6] Here again there is no mention of race or classification of patients by race. Dr. Trudeau's and Dr. Bowditch's indifference to the race question is of course partly explained by the low black population in the areas they served — Boston's was 2% at the time.[7] But the fact remains that they were not part of the effort to cure tuberculosis in the mass of the population, and they behaved as if black people were nonexistent.

By contrast, the Consumptives Hospital of the City of Boston was founded in 1906 explicitly to fill the gap left by Rutland's restrictiveness, and it was committed to the permanent detention of very advanced cases, especially among the "homeless, friendless, dependent, dissipated, and vicious."[8] Its founders pointed an accusing finger at the sanatorium builders for reaching only a small proportion of the population and failing to get at the root of the tuberculosis problem.[9] The hospital was located in Mattapan, a rural area just within the city limits, but there was also an outpatient department closer in-town, which held an evening clinic. At first blacks were not seen as a major problem — Russian Jews and Italians were singled out. But in 1912 the superintendent of nurses mentioned that blacks were beginning to present themselves for sanatorium treatment. She first wrote:

> More colored patients have been cared for in hospital beds this year than at any time previous, but the number is still small.

The following year she reported:

> Our work with the colored people has been increasingly successful. The beds in private hospitals which have been used for colored women were always in use, and a number of colored women were sent to the hospital at Mattapan.[10]

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[6] Sharon, Mass. Sharon Sanitarium for Pulmonary Diseases, Annual Reports, 1st thru 39th, 1891-1929. 1st report (1891-92), p. 6; 2nd report (1892-93), p 8, 39th report (1929), p. 29 Rutland, Mass. Massachusetts State Sanitarium at Rutland, Annual Reports, 1st thru 13th (1897-1909). 4th report (1900), p. 22, 10th report (1906), p. 9, *et passim*.

[7] *Negro Population 1790-1915*, table 8, p. 91, relates the black and white urban and rural population of the major U. S. geographical areas as of 1910:

New England 60,877 blacks; 5,389,967 whites
Massachusetts: 35,243 blacks; 3,087,146 whites
New York State: 117,486 blacks; 7,061,043 whites

Table 10, p. 93, gives percentages of blacks in major U. S. cities in 1900 and 1910.

New York: 1.8% (1900), 1 9% (1910)
Boston: 2 1% (1900); 2 0% (1910)

[8] Boston, Mass Consumptives Hospital, Annual Reports, 1906-07 thru 1921-22 In the 1st report (1906-07), pp. 9-10, the desire is expressed not to duplicate Rutland. The commitment to the indigent is expressed in the 2nd report (1907-08), p. 29

[9] 2nd report, p 23.

[10] 7th report (1912-13), p 42; 8th report (1913-14), p. 42. The hospital's originating legislation authorized the contracting for beds in private hospitals [1st report (1906-07), p. 5]. The early practice was to care for blacks in these beds; sending them to Mattapan was a later development.

Perhaps the advance wave of the migration was arriving in Boston; perhaps too the outpatient department was reaching blacks and encouraging them to go to the sanatorium. Hospitals like Boston Consumptives, because of their commitment to advanced cases and to the poor, found themselves treating blacks, and had to decide the terms under which they would receive them. It is interesting that Boston Consumptives preferred the women. Segregation was taken for granted.

These dual goals of cure and detention were at first reflected in the creation of two distinct types of tuberculosis hospital; nevertheless, individual institutions found it difficult to restrict their admissions, and all-purpose sanatoria tended to evolve. When a hospital began to accept advanced cases it often confronted the race problem; likewise when the tuberculosis movement as a whole began to concentrate on the isolation of the advanced consumptive some provision for blacks became necessary.[11] The first impulse was to evade the issue. Dr. Lawrence F. Flick of Philadelphia, a pioneer in the sanatorium movement, was persistent in calling attention to the crucial importance of isolating patients in the highly contagious last stages of the disease.[12] In about 1909 his White Haven Sanatorium began admitting terminal cases, including blacks.[13] But in December 1914 a racial disturbance occurred in which the white patients objected to the presence of the blacks, and the board of directors met the following morning and decided that since segregation was uneconomical they would admit no more blacks.[14] There the matter rested for nineteen years, and Flick's Pennsylvania Society supported no beds for advanced black consumptives until 1933. Here was a major failure of the sanatorium movement to deal with the race question even when confronted with it directly.

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[11] For discussion by the national association, see the report of the Committee on Hospitals for Advanced Cases of Tuberculosis, *Trans. NASPT,* 1913, *9:* 54-66, and S. Adolphus Knopf, "The Treatment of Advanced Pulmonary Tuberculosis," *Trans. NASPT,* 1914, *10:* 74-88

[12] Dr. Flick's interests were by no means limited to the sanatorium movement; on the contrary, he was one of the "founding fathers" of the entire American anti-tuberculosis effort. His Pennsylvania Society for the Prevention of Tuberculosis, founded in 1892, was the first statewide voluntary TB association, and in 1904 it became a model for the new National Association for the Study and Prevention of Tuberculosis. Dr. Flick was also active in the campaign to get Philadelphia's board of health to set up procedures for the recording of tuberculosis cases. He himself described all this activity in *The Development of Our Knowledge of Tuberculosis* (Philadelphia, 1925), and in *The Pennsylvania Society for the Prevention of Tuberculosis* (Privately printed, 1935).

[13] Dr. Flick was instrumental in founding two Philadelphia institutions, the White Haven Sanatorium (1901) and the Henry Phipps Institute for the Study and Treatment of Tuberculosis (1903). The two were at first under a joint directorship, with White Haven treating incipient cases and Phipps caring for the advanced cases and also carrying on research But in 1909 the University of Pennsylvania took over Phipps, and gave up first the advanced beds, and eventually all beds, turning the Institute into an outpatient facility. To Dr. Flick this was a rejection of his policies. White Haven now began accepting advanced patients who could no longer be received at Phipps See Flick, *Penn. Society,* pp 5-6, 23, and *The Development of Our Knowledge of Tuberculosis,* p. 709.

[14] Flick, *Penn. Society,* p 26

Still, this policy of concentrating on advanced consumptives would eventually make some provision for blacks imperative. This became apparent very early in Maryland, where a public analysis of the situation took place, resulting in a commitment to build facilities for blacks. A state sanatorium had been founded in 1906, restricted to whites, and at first limited to incipient cases. But continued pressure came from the public for the admission of advanced cases, and the directors gradually accepted more and more of them, until in 1923 they changed their statement of purpose to include moderately advanced cases.[15] Meanwhile the condition of blacks began to come to the attention of health workers, somewhat by accident. When a visiting nurse and clinic service was established in Baltimore blacks surprised everyone by taking full advantage of it, and the extent of the illness among them became apparent — as of 1913 they made up 17½% of Maryland's population but accounted for 37¾% of the state's tuberculosis deaths.[16] In 1910 a Baltimore Tuberculosis Commission recommended the establishment of a special tuberculosis hospital for blacks, with high priority for advanced cases, and affirmed the need for "superior, as well as separate, provision for the tuberculous of the colored race," meaning relatively more beds in proportion to the black population.[17]

These recommendations led to the convening in 1915 of Maryland's First State Conference on Tuberculosis, at which the "Negro tuberculosis problem" received a thorough airing.[18] The governor of the state presided, the treasurer of the National Association for the Study and Prevention of Tuberculosis, Dr. William H. Baldwin, was present, and health officers and hospital administrators from Maryland and the District of Columbia participated.[19] The focus of attention was the advanced black consumptive.

A central idea expressed by the conferees was that the self-interest of whites demanded an effort to cure blacks. It was pointed out that whites were necessarily in contact with the blacks who were their cooks and laundresses, and that segregation, though perhaps desirable as a social custom, could not offer protection against disease.[20] This candid admission of self-interest led to the wholesome realization that the treatment of tuberculous blacks was not a matter of charity, but of public health. It was seen as important that both whites and blacks grasp the significance of this fact: whites must be persuaded to pay for facilities, and blacks must be educated to use them. Dr. William C. Woodward, health officer of the District of Columbia, lamented the fact that all forty-five public beds available to blacks in Maryland were charity beds, and called for education to free patients from the notion that in seeking care they were accepting charity.[21] Dr. Gordon Wilson of the Baltimore City Tuberculosis Hospital at Bayview concurred, and admitted that a mistake had been made in locating this hospital on the same grounds with the poorhouse, since patients refused to go there.[22]

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[15] Maryland Tuberculosis Sanatorium, Annual Reports 1st thru 39th (1909-1946) 3rd report (1910), pp 5-6 *et passim;* 7th report (1914), p. 7; 15th and 16th reports (1923), p. 3

[16] *The Negro Tuberculosis Problem in Maryland — Whose Problem?* (Baltimore: Maryland Assn. for Prevention and Relief of Tuberculosis, 1915), pp. 1-2; William B Matthews, Jr., "History of the tuberculosis movement in Maryland," *Diseases of the Chest,* 1942, *8:* 332. For figures on the black population in Maryland in 1910, county by county, see *Negro Population 1790-1915,* p 138, map XIII Blacks were concentrated in the rural areas south of Baltimore and east of the District of Columbia, and in the Eastern Shore counties. Baltimore city had only 15 2% blacks (table 10, p 93), while the northern counties had less than 12½%.

[17] *The Negro Tuberculosis Problem in Maryland,* p 7.

[18] The pamphlet mentioned above (n 17) is a summary of discussuion at this conference

[19] Abbreviated NASPT. The name was soon shortened to National Tuberculosis Association (NTA) In 1968 the society became the National Tuberculosis and Respiratory Disease Association Today it is the American Lung Association.

Whether or not blacks were enthusiastic about going to the hospital, forty-five beds were obviously inadequate. One physician reported that in the past three years 422 blacks had applied for treatment at the Phipps Dispensary in Baltimore, of whom 46% had far-advanced tuberculosis, and that there was no place to put them.[23] It was also pointed out that terminal patients were generally reluctant to go far from home to die, and NASPT treasurer, Dr. Baldwin, suggested small regional hospitals, a solution being advocated by the association at that time. He applied the idea specifically to blacks.[24]

The conference concluded with a resolution that the state should provide "adequate hospital facilities for the segregation and care of advanced cases of Tuberculosis in small hospitals distributed over the State" and "that adequate provision be made for the segregation, treatment, and care of negroes suffering from Tuberculosis."[25] These recommendations were reiterated in a report submitted to the governor by the board of managers of the Maryland Tuberculosis Sanatorium, and a request was made for a $150,000 appropriation for construction and maintenance of the first facilities for blacks.[26]

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[20] Governor Goldsborough, opening address, *The Negro Tuberculosis Problem in Maryland* p. 11; Dr. William C Woodward, *ibid*, p. 13

[21] Dr. Woodward, *ibid.*, pp 15-17.

[22] Dr. Gordon Wilson, *ibid* , p 27 The hospital at Bayview was the direct descendent of the Baltimore Almshouse, which dated from 1776. At one point it was called the Bayview Asylum, and it included the care of the insane. In 1925 it became the Baltimore City Hospital

[23] *The Negro Tuberculosis Problem in Maryland*, p 23.

[24] Dr Baldwin, *ibid* , p. 25 The 10th report of the Maryland Tuberculosis Sanatorium (1917, p. 19) recommended county tuberculosis units, to be connected to existing institutions, that is, to general county hospitals, for reasons of economy For discussion of this idea at the national association's meeting, see George J Nelbach, "Some problems of county tuberculosis hospitals," *Trans. NASPT*, 1917, *13*· 451-54, and Otto R. Eichel, "County tuberculosis hospital problems," *ibid.*, 455-57.

[25] *The Negro Tuberculosis Problem*, p. 32.

[26] Maryland Tuberculosis Sanatorium, 10th report (1917), pp. 8-22, esp p 9

It was one thing to make this commitment; implementation was another matter. Maryland's sanatorium builders came up against a formidable combination of citizens' opposition and the parsimony of the legislature. In 1918 an appropriation of $75,000 was obtained and a site was chosen in Towson adjacent to the all-white Eudowood Sanatorium.[27] A bitter court fight ensued in which a citizens' group argued that a "colored" tuberculosis sanatorium would be a nuisance anywhere, and that the site under consideration was in too heavily populated an area. An alternative site was eventually found at Henryton, twenty-five miles west of Baltimore, and in 1923 the "Colored Branch" of the state sanatorium was opened.[28]

No system of regionalized sanatoria ever materialized for blacks in Maryland.[29] Henryton became the state's one multi-purpose Negro sanatorium, and was expanded until in 1942 its capacity of 485 beds was considered adequate for the needs of the state's entire black population.[30] As had been expected, most of its admissions were in the far-advanced stage of the disease: 111 out of 135 in 1928-29, and 146 of 201 in 1929-30.[31] One of its medical directors, Dr. John T. O'Neill, deplored the fact that blacks did not seek treatment earlier, but he did not propose active case-finding efforts, and he saw educational field work among blacks as a difficult task.[32]

Mrs. Melvia Hawkins, a black nurse who worked at Henryton for forty years beginning in 1930, provided first-hand information about the institution, and her recollections are corroborated by the information in Henryton's nnual reports.[33] She described the rigid segregation of the staff, who were ed and housed separately.[34] A major strength of the institution, in her pinion, was its school for black tuberculosis nurses, which produced dedi- ated ward nurses.[35] Henryton suffered from chronic shortage of funds and he absence of social services, and the nurses had to use their own resources o supply the patients' needs.[36] The Depression years were especially difficult, but World War II brought another kind of problem, a labor shortage so evere that prison inmates had to be paroled to serve at the hospital.[37] This, ccording to Mrs. Hawkins, hurt morale. Serious difficulties were caused by Henryton's isolated location, which rendered impossible sustained support from civic organizations and which prevented the patients from receiving visitors.[38] There was an almost total lack of contact with the voluntary tuberculosis associations. In spite of some obvious strengths, Henryton was only a partial fulfillment of the promises of the 1915 convention. And Maryland's tuberculosis mortality statistics render a negative verdict with regard to the success of the state's program for blacks; between 1914 and 1940 the white rate was reduced by two-thirds, from 157.5/100,000 to 44.9, while the black rate was only halved, from 405.6 to 204.[39]

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[27] 11th and 12th reports (1919), pp 9-12

[28] 13th and 14th reports (1921), p 6; 15th and 16th reports (1923), pp. 4-6.

[29] In 1938 a request was submitted for an appropriation for a "colored annex" to the Eastern Shore Sanatorium at Salisbury, because of the large black population in that area and the difficulties of transportation to Henryton [30th and 31st reports (1937-38), p 11] It was apparently not granted. Black patients were admitted at about this time to Mount Wilson Sanatorium for thoracic surgery, to a separate ward [Matthews, *op. cit.* (n. 16 above), p 340] The NTA directories through 1954 make no mention of any Negro facilities other than Henryton and Mount Wilson.

[30] Henryton at first had a long waiting list [17th, 18th, and 19th reports (1924-26), p 11] In 1938 the Maryland Tuberculosis Sanatorium Commission called for increased beds for Negroes, and pointed out that whites had two beds per annual tuberculosis death compared to one bed for every two deaths among blacks [*Monthly Bulletin, Md. State Dept. of Health*, Sept. 1938, cited in *National Negro Health News*, Jan.-Mar., 1939, 7(1): 12] An expansion occurred as a result, bringing the state's facilities for Negroes up to 1 1 beds per annual death by 1942, still short of the NTA's recommended 2 beds per death, but apparently adequate to the demand NTA *Tuberculosis Hospital and Sanatorium Directory*· Henryton 1926 — 100; 1931 — 166, 1934 — 156, 1938 — 227; 1942 — 485, 1948 — 475; 1951 — 385, 1954 — 425. *Cf.* Matthews, *op cit.*, p. 340. Regarding the NTA's standards, see *Tuberculosis Sanatorium Planning* (NTA, 1939), p 3, and Alton S. Pope, "The Role of the Sanatorium in Tuberculosis Control," *The Milbank Memorial Fund Quarterly*, Oct. 1938, *14* [4]: 327-37, esp. 333-34.

[31] Maryland Tuberculosis Sanatorium, 15th and 16th reports (1923), p 68; 22nd and 23rd reports (1928-29 and 1929-30), p 96

[32] 22nd and 23rd reports, p. 97; 26th and 27th reports (1933-34), pp 99-100

Henryton had been founded out of concern for the advanced black consumptive, and this class of patient would remain a focus of attention for many years, until mortality rates had declined sufficiently to permit the movement to broaden its scope. In 1939 Dr. Peyton F. Anderson of the Lower Harlem Chest Clinic in New York complained that so much attention had been paid to the advanced black patient that tuberculosis workers had the impression that the disease was clinically different in blacks and that they did not get it in its incipient form.[40] He called for large-scale case-finding efforts by means of the

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[33] Personal interview, February 22, 1974.

[34] *Cf.* 32nd and 33rd reports (1940), p. 75.

[35] *Cf.* 17th, 18th, and 19th reports (1924-26), p. 68 It was a two-year institution, eventually empowered to grant a L.P.N degree.

[36] *Cf* 26th and 27th reports (1933-34), p. 100.

[37] 34th and 35th reports (1941-42), p. 85: use of patient labor; 36th and 37th reports (1943-44), p 89: convict labor.

[38] The director at one point expressed a desire for a "colored auxiliary," but as of 1934 this had not materialized [22nd and 23rd reports (1928-29 and 1929-30), p. 97, 26th and 27th reports (1933-34), p. 99]. Somewhat later it was mentioned that Negro civic groups entertained the patients and supplied them with magazines, but according to Mrs. Hawkins no group ever adopted the sanatorium and visited it on a sustained basis (30th and 31st reports, pp 102-03, 32nd and 33rd reports, p 77). Mrs Hawkins lamented the neglect of the black churches. She recalled that there was a white Lutheran minister who was paid by the state, and that the Jesuits from nearby Woodstock College cared for the Catholic patients, but said that only rarely would a Negro minister come to visit one of the members of his church.

[39] Matthews, *op. cit.* (n. 16 above), p 340.

[40] Peyton F. Anderson, "Minimal tuberculosis," *National Negro Health News*, July-Sept., 1939, 7(3),

X-ray, and, interestingly, proposed a plan for hospital treatment similar to the dual system that had begun to emerge in the early days of the movement: rest-cure facilities for incipient cases in the country and hospitals for acute and complicated cases in the cities. One might say that in the matter of sanatorium care blacks trailed behind whites by about forty years.

Many, perhaps most, members of the earliest generation of tuberculosis workers, when they turned their attention to blacks at all, saw the situation in terms of the "white man's burden."[41] This was especially true of the sanatorium builders. But by about 1910 a contrasting philosophy, that of Negro self-help as advocated by Booker T. Washington, was beginning to have an influence.[42] Its natural sphere was the educational activity of the voluntary associations, and its major emphasis was on prevention, with individual hygiene as a first line of defense. Washington was committed to Negro improvement through honest labor and the acquisition of marketable skills. His Tuskegee Institute was an industrial training school, but it was also an institution for character formation, stressing hygiene, or as Washington put it, "the gospel of the toothbrush." Political activity and "the agitation of questions of social equality" were definitely discouraged.

Washington's personal physician, Dr. John A. Kenney, was on the staff at Tuskegee. In 1911 he reported the existence of a Negro anti-tuberculosis movement parallel to that in white society, heavily emphasizing education and clinics, though also planning to build Negro sanatoria.[43] He said that

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23-27. His x-ray survey was reported in "Black tuberculosis," *Time*, June 19, 1939, cited in *National Negro Health News*, July-Sept. 1939, *7*(3), 32

[41] The term appears frequently: J. M. Barner, "Tuberculosis among our Negroes in Louisiana," *New Orleans Med. & Surg. J.*, 1902-3, *55*. 233; L. C. Allen, "The Negro health problem," *Am J Pub. Health*, March 1915, *5*. 194.

[42] For Washington's exposition of his own philosophy see his autobiography *Up from Slavery*, especially ch. xiv, "The Atlanta Exposition Address." The importance of the toothbrush is discussed in ch xi. Louis R. Harlan of the University of Maryland is chief editor of the Booker T. Washington papers, and has thus far published two volumes: *The Booker T. Washington Papers* (Urbana, Ill . U. of Illinois Press, 1972). Vol 1: Louis R. Harlan, John W. Blassimgame (eds), *The Autobiographical Writings*. Vol. 2: Louis R Harlan et al. (eds.), *1860-89*. Dr. Harlan has also written a biography of Washington: *Booker T Washington. The Making of a Black Leader, 1856-1901* (New York: Oxford University Press, 1972). See especially ch. 11, "A Separate Peace," pp. 204-28, on the Atlanta Exposition speech

[43] John A. Kenney, "Health problems of the Negroes," *J. Nat. Med Assn.*, Jan -Mar., 1911, *3*(1) 127-35 Reprinted from *The Annals of the American Academy of Political and Social Science* (Mar 1911) Dr Kenney listed about thirty Negro-owned or operated hospitals and sanatoria, but did not distinguish tuberculosis facilities (p. 132) None of the institutions he mentioned are in the NTA directories As of 1935 there were five Negro state tuberculosis sanatoria, one county sanatorium, and three proprietary institutions (*Survey of Tuberculosis Hospitals and Sanatoriums of the American Medical Association*. Reprinted from the tuberculosis number of *JAMA*, Dec. 7, 1935, *105* 1870).

Tuskegee had an active health education program for the public, and that the Women's Club of Tuskegee, headed by Mrs. Booker T. Washington, was teaching hygiene and elementary housekeeping. He also reported that the Chicago Tuberculosis Institute had formed a Negro Committee in 1908, which was sponsoring Sunday services at Negro churches with sermons on tuberculosis. Also, that the Negro North Carolina Mutual and Provident Association was training its agents to give health lectures when they paid sick claims.

Washington's plan was presented as a solution to the Negro health problem at the 1914 conference of the American Public Health Association in Jacksonville, Florida.[44] L. C. Allen, a white participant, felt that disease among blacks was caused by "shiftlessness, ignorance, and poverty," and he called for a "systematic, *disciplined* [underlined in text] training of [their] physical, mental, and moral powers." He suggested that Negro clubs might be used to mpart information about tuberculosis. He had the definite opinion that blacks should remain disenfranchised, remarking that politicians had corrupted "Cuffy" by giving him the ballot. He referred obliquely to Washington by saying that the "wisest negroes" agreed with his ideas.

In 1915 Dr. Washington and Dr. Kenney publicly assumed the leadership of this Negro movement by proclaiming National Negro Health Week, an educational event to be conducted by blacks for the black community.[45] No less a figure in public health than Dr. William H. Welch of Johns Hopkins endorsed the idea by sharing the podium with Booker T. Washington at the 1915 Health Week observance in Baltimore.[46] Health Week would continue until 1950, serving as a nucleus for all kinds of black-sponsored health activity. Due emphasis would be given to tuberculosis, as the tuberculosis societies developed exhibits for Negro schools and other community centers to dramatize the principles of hygiene.[47]

Thus, by agreement between white tuberculosis workers and at least a segment of the black community, it became a firmly fixed policy that blacks would be treated within segregation, and encouraged to teach and care for their own people. Blacks who participated in this compromise maintained a tone of optimism, and, at least in the early days, refrained from making more than minimal demands on society at large.

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[44] L. C. Allen, "The Negro health problem," *Am. J. Pub. Health,* March 1915, *5* 194-203.

[45] Health Week originated in 1913 when the Negro Organization Society of Richmond, Virginia, sponsored a pring-cleaning week, during which the Negro community cleaned its homes, vacant lots and fields. Booker T. Washington borrowed the idea and expanded it. [Dr. J. N Baker, Ala. State Health Officer, *National Negro Health News,* Oct -Dec. 1938, *6*(4): 8]. Cf James H. Cassedy, *Charles V. Chapin and the Public Health Movement* (Cambridge, Mass.: Harvard University Press, 1962), pp 99-100, for a description of the annual spring clean-up weeks that were popular among whites at the turn of the century.

[46] Mentioned in a report of a radio broadcast by Dr. Huntington Williams, Baltimore Commissioner of Health, in *National Negro Health News,* Apr.-June, 1937, *5*(2): 1-3.

[47] *The People of Essex County vs. Tuberculosis:* Annual Report of the Essex County, N. J , Tuberculosis League, 1939-1940, p 12; S. L Smith, *Builders of Health and Happiness The Story of the Tennessee Tuberculosis Association* (Nashville, 1952), p. 45

Negro self-help began to be applied in the work of the voluntary associations. Sometime before 1909 the Louisville [Kentucky] Anti-Tuberculosis Association created a "Committee on Conference [sic] and Prevention of Tuberculosis among the Colored People" composed of twenty-four blacks, the chief health officer of the city, and five representatives of the association's board of directors. There was also an advisory committee of five blacks out of eleven members.[48] The cost of the work among blacks was borne by the association as a whole, but all money collected from blacks was used in the black community. In 1909 a very useful idea was hit upon: a black visiting nurse was hired with money collected from blacks on "Ten Cent Day."

The idea of using the black visiting nurse as a key figure in the Negro program received the attention of the nationwide movement through Dr. H. R. M. Landis of the Phipps Institute in Philadelphia.[49] Dr. Landis became concerned about his failure to reach blacks, and reasoned that they trusted members of their own race and would be more likely to use their services. In 1914 he hired a black nurse, and eventually set up a training arrangement with the Negro Mercy Hospital, whereby nurses received their general training at the hospital and came to the Institute for field experience, which was essentially training in the teaching of tuberculosis hygiene. By 1926 his "Negro Bureau" included sixteen black physicians and ten nurses, and was conducting four clinics. The white nurse, Fannie Eshleman, reported that the original plan had been to turn the entire operation over to the blacks, but that this had been shelved because, she said, "they still need guidance."[50] Two problems she mentioned point up the limitations of black self-help in a segregated society: qualified black physicians were difficult to obtain, and black nurses were reluctant to seek advanced training because the opportunities for career advancement were so limited.[51] Miss Eshleman offered no solution to the first problem, and the Institute's method of dealing with the second was somewhat irrational in that it did nothing about the lack of career opportunity: a scholarship was offered whereby a graduate of Mercy Hospital worked for a year at the Institute and had a third of her salary withheld for use in graduate study.

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[48] *Six Years' Work in Louisville by the Louisville Anti-Tuberculosis Association* (Louisville, Kentucky, 1911), pp. 10, 22

[49] H. R M. Landis, "Colored physicians and colored nurses for colored patients," *Trans. NASPT* 12 (1916), 377-86 R H. Shryock, *National Tuberculosis Association, 1904-1954* (New York: NTA, 1957), p. 235, called attention to the importance of Dr Landis' work in the development of the NTA's race policy He himself accepted Dr. Landis' formula.

[50] Fannie Eshleman, R. N. "The Negro nurse in a tuberculosis program," *Public Health Nursing*, July 1935, *27*. 375-78

[51] W Montague Cobb, in "A new dawn in medicine," reprinted from *Ebony* (Sept. 1963), and "The black physician in America," reprinted from *The New Physician*, Nov 1970, *19* 912-16, has described the obstacles which have faced black would-be physicians

In any case the black public health nurse became an important figure, especially in the South. In Arkansas the Pulaski County Health Association employed one in 1917, for the same reasons that had motivated Dr. Landis.[52] In 1928 the Julius Rosenwald Fund, a philanthropy which built Negro schools and hospitals and supported the training of black professionals, sponsored a training program which resulted in the sending out of two hundred nurses to serve in the rural South.[53] Then in 1937 the National Tuberculosis Association endorsed the idea by sponsoring two graduate fellowships for black nurses.[54] The idea became firmly established that blacks ought to be cared for in separate programs, with emphasis on outpatient care and instruction in hygiene delivered by black public health nurses.

The years before 1930 saw the leaders of the tuberculosis movement develop an initial awareness of their responsibility toward blacks; the onset of the Depression appears as a watershed in the movement. One would think that economic privation would have aggravated the tuberculosis problem, but this is not clear from the statistics.[55] Initially some programs experienced financial difficulties.[56] But the New Deal gave impetus to social projects generally, and tuberculosis workers welcomed it and actively sought such government measures as housing reform, welfare payments to tuberculous breadwinners, and food supplements for needy patients.[57] Some of the aid obtained — notably through the maternal and child health and categorical disease provisions of the 1935 Social Security Act — trickled down to black people.[58] However, the social context, black self-help within segregation, did not change at all.

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[52] Fay Williams, *50 Years Fighting Tuberculosis in Arkansas, 1908-1958* (Little Rock, 1958), p. 13.

[53] Smith, *Builders of Health and Happiness*, pp 50-51 For a description of the activities of the Rosenwald Foundation, see Henry Allen Bullock, *A History of Negro Education in the South* (New York· Praeger Publishers, 1970), pp 138-43.

[54] Shryock, *NTA* (n. 49 above), p. 236.

[55] See Anthony M. Lowell, *Tuberculosis Morbidity and Mortality and Its Control* (Cambridge, Mass.· Harvard Univ. Press, 1969): statistics on tuberculosis mortality in the U. S. since 1900, p. 68, discussion of economic indices and their relation to mortality rates, pp. 83-93.

[56] Williams, *50 Years Fighting Tuberculosis in Arkansas*, p 15, reported that in 1932 the Arkansas Tuberculosis Association's Negro conference had to discontinue its work due to lack of funds.

[57] Blacks were of course especially enthusiastic See Kathleen Allen, "Some medical school problems in hospitals," *J. Nat. Med. Assn.*, Feb. 1936, *28*(1)· 42-45. Discussion led by Miss Grace Harrison, Social Services Director, Hubbard Hospital, Nashville, Tenn., p. 44. Miss Harrison, now Mrs. Grace Harrison Ferguson, kindly submitted to an interview on April 5, 1974, regarding her experiences as Meharry-Hubbard's first medical social worker. Among the benefits of the New Deal she remembered (WPA) housekeepers who were paid by the government for their services to the sick poor The interview is on tape in the Fisk University Library Black Oral History Collection in Nashville See also Elaine Ellis, "Tuberculosis among Negroes," *Crisis* Apr 1939, *46:* 125; H. M. Payne, "The Problem of Tuberculosis Control among American Negroes," *Am. Rev. Tuberc* LX (1949), 339.

In 1931 the U.S. Public Health Service coopted National Negro Health Week by employing a Negro, Dr. Roscoe C. Brown, as coordinator of a year-round National Negro Health Movement.[59] A quarterly bulletin describing black-sponsored health activities was published for eighteen years. Tuberculosis was a major item of interest, and when, in 1944, a Tuberculosis Control Division was created in the Public Health Service this newsletter served as its organ of communication with the black community. The Negro Health Movement maintained a close association with Tuskegee, and the federal government's endorsement of the Booker T. Washington philosophy was made explicit in the slogen, "Help yourself and your community to better health."

The National Tuberculosis Association also took official cognizance of the Negro problem beginning in the 1930s. It helped coordinate the philanthropic efforts of the Rosenwald and Rockefeller funds, and in 1931 created a Committee on Tuberculosis among Negroes, under the chairmanship of Dr. Wade Hampton Frost, noted epidemiologist and member of the Public Health Service's commissioned corps.[60] With the support of the Rosenwald fund the committee conducted a five-year survey of tuberculosis among blacks, with emphasis on the South.[61] Then in the late 1930s, under NTA staff member Cameron St. Clair Guild, and with the participation of black educators such as Dr. Charles S. Johnson of Fisk University and Dr. Paul B. Cornely of Howard, this same committee carried on a variety of health education activities, including essay contests for students in Negro schools, seminars in hygiene for their teachers, postgraduate seminars and clinical experience for black physicians, and the publication of pamphlets and of materials for the Negro press. According to Dr. Cornely, a survey was also made of the 110 Negro colleges in the United States, to determine the quality of the health services available to the students.[62] Dr. Cornely explains the unspecific character of these activities as the result of a deliberate policy of Guild's. Guild felt that since tuberculosis was a social disease spawned by the entire complex of conditions related to poverty, the proper approach to its eradication was the general improvement of the conditions of life, to be achieved especially through education in hygiene. This is not far removed from Booker T. Washington's idea.

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[58] Paul B Cornely, M D., former chairman of Howard University's Department of Community Health Practice, was active in the tuberculosis movement, and shared his recollections with me in an interview on March 4, 1974 He pointed out the importance of the Social Security Act to the tuberculosis movement, and directed my attention to the Public Health Service's special interest in tuberculosis. He described the Public Health Service's National Negro Health Movement For a summary of the provisions of the Social Security Act of 1935, as well as a history of the effort to get the act through Congress, see Edwin A. Witte, *The Development of the Social Security Act* (Madison· University of Wisconsin Press, 1963).

[59] United States Public Health Service, *National Negro Health News*, vols. 1-18 (1933-1950)

[60] Shryock, *NTA* (n 49 above), pp. 235-36. For biographical information on Dr Frost, see Kenneth F Maxcy (ed), *Papers of Wade Hampton Frost* (New York. The Commonwealth Fund, 1941).

[61] *A Five-Year Study of Tuberculosis among Negroes*, Report of the Committee on Tuberculosis among Negroes (New York· NTA, 1937).

Committee member Dr. Charles S. Johnson made it clear that he accepted the principle of self-help within segregation. In an address entitled "Should We Expect More from the Negro in the Solution of His Own Problems?" he spoke of the obligation of better-educated blacks to help their people, called on black physicians to practice a more "socialized medicine" among the poor, demanded that Negro institutions carry on more public health work, and called for assistance from black ministers, the Federated Colored Women's Clubs, and the Negro press, The NTA endorsed these ideas by publishing the address.[63]

Tennessee was something of a NTA showplace, partly because of the presence of Dr. Johnson at Fisk, but also undoubtedly because the Health Officer of the state, Dr. Eugene L. Bishop, was a former graduate student of Dr. Wade Hampton Frost.[64] In 1929 Dr. Bishop secured Rockefeller fund support for a study of racial differences in the state's tuberculosis mortality. This was followed by an epidemiological study conducted by Meharry Medical College, Fisk's social science department, and the state department of health, which attempted to explain the racial disparity. A subsequent project aimed at reducing these mortality rates by training teachers in health education. At this time Meharry was also participating in the Rosenwald fund's program for training public health nurses. Thus far Tennessee was a model of the Booker T. Washington idea; ironically, when it came to building the state sanatorium system black self-help was bypassed in favor of segregated beds or wards within large sanatoria.[65] The limitations of Dr. Johnson's philosophy were apparent even within his own state.

Most of the activity described thus far took place in the South, partly because the NTA in the 1930s deliberately concentrated on that region, but also because tuberculosis societies in the North often ignored the race question entirely.[66] This was by no means uniformly true: there was an active program in Essex County, New Jersey, described by a spokesman as "of the Negro, by the Negro and for the Negro."[67] The New York Tuberculosis and Health Association had an active Harlem Committee that was well supported by local Negro organizations.[68] The Tuberculosis League of Pittsburgh in 1931 sponsored a "Negro Health Survey" which concluded by recommending improvements in hospital facilities and the reorganization of the municipal public health nursing program.[69] Still, the North was more likely than the South to take refuge in a policy of color-blindness. In 1939, for example, Dr. B. S. Pollack of the New Jersey Tuberculosis League remarked that since blacks formed such a large proportion of the poor, routine examinations of relief and WPA enrollees would "largely solve the problem of their care without over-emphasizing the racial issue."[70]

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[62] Dr. Cornely, interview, March 4, 1974 His investigations resulted in a number of articles, including "The administration of health education and health supervision in Negro colleges," *Am J. Pub. Health*, 1936, *26*· 389-96, "Tuberculosis infection in Negro colleges," *Am Rev Tuberc* , 1938, *37* 549-55, and "The status of student health programs in Negro colleges, 1938-1939," *The Research Quarterly*, March 1941, *12*. 12-21

[63] Dr Charles S. Johnson, "Should we expect more from the Negro in the solution of his own problems?" NTA, 1935 Cited by Philip P Jacobs, *The Control of Tuberculosis in the United States* (New York: NTA, 1940), pp 207-08.

[64] Maxcy, *Papers of Wade Hampton Frost*, p. 17; Smith, *Builders of Health and Happiness*, pp 40-52; 53-60

[65] Smith, *op cit.*, pp. 53-60.

During these years of dominance of Washington's racial philosophy, that is, at least until the end of World War II, blacks who opposed accommodation remained unhappily on the sidelines, but failed to unite in an effective demand for the integration of health services. W. E. B. DuBois had written *The Health and Physique of the Negro American* as far back as 1906, calling attention to the economic and social causes of illness among blacks, and demanding scientific research on specific health problems. He had singled out tuberculosis as a disease caused by poverty.[71] Later, in 1933, in the context of a discussion on health, he called for an end to discrimination in all its forms.[72] His opposition to Booker T. Washington is well known, and the National

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[66] Worcester [Mass.] Association for the Relief and Control of Tuberculosis. Annual Reports, 1906, -07, -09 No mention of blacks. *Three Years at the Dubois Health Center.* Bulletin of the Tuberculosis and Health Society of Detroit and Wayne County, Michigan, No. 112 (1928). Extensive discussion of the social and economic aspects of the tuberculosis problem No mention of race, but pictures of black children. *A Story in Word and Picture of the . Work of the Newark Anti-Tuberculosis Association* (Newark, N. J , 1909-10, 1910-11, 1912-13), *Ten Years of Service, 1909-19,* and miscellaneous pamphlets Statistics on nationality, race, and occupation, but no other mention of blacks *Then and Now —New Jersey Tuberculosis League, 1906-1936.* No mention of race

[67] *The People of Essex County vs Tuberculosis,* p 13.

[68] C -E A. Winslow, *The First 50 Years of the New York Tuberculosis and Health Association* (ca. 1952), no page number.

[69] Elsie Witchen, *Tuberculosis and the Negro in Pittsburgh* (Tuberculosis League of Pittsburgh, 1934).

[70] *A Résumé of the Findings on the Present Status of Tuberculosis in New Jersey.* Compiled by the Committee on Tuberculosis of the State Conference on Health and Welfare (Newark. New Jersey Tuberculosis League, 1940), p. 11.

[71] W. E. B. DuBois (ed), *The Health and Physique of the Negro American* (Atlanta University Publications #11, 1906). See his analysis of tuberculosis mortality rates, p 89.

[72] W. E. B. DuBois, "Postscript: Our Health," *Crisis,* Feb 1933, *40* 44

Association for the Advancement of Colored People, which he had helped found, was in 1936 conspicuous by its absence from a list of agencies cooperating in the National Negro Health Movement.[73] Yet even the NAACP equivocated as late as 1940. In 1939 an article appeared in its journal *Crisis* exposing the inadequacy of hospital facilities for blacks, in particular in Chicago, where the Municipal Tuberculosis Sanatorium, the only facility open to blacks that was equipped to treat tuberculosis, was reported to have only a dozen black patients at a time, though it had 1200 beds.[74] The exposé concluded not with a condemnation of segregation but with a call for the training of Negro doctors and nurses. In 1940 the NAACP in Delaware, in the person of Rev. Arthur James, was still encouraging the building of Negro sanatoria. In that year Edgewood, the Negro branch of the state sanatorium, dedicated a new building, and Rev. James delivered the invocation. It was reported that his organization had done much to bring about the event.[75]

Finally, however, under the leadership of Dr. W. Montague Cobb, chairman of the NAACP's National Health Committee, the organization began to demand hospital integration, and in 1952 went on record as opposed to the establishment of any new segregated Negro hospital.[76] Beginning in 1957 the NAACP joined with the (Negro) National Medical Association and the National Urban League in sponsoring a series of seven annual "Imhotep" conferences on hospital integration.[77] The Civil Rights Act of 1964, which gave hospital desegregation legal sanction, was in part an outcome of this effort.

Integration did not come to the tuberculosis movement until very late; indeed, sanatoria were in many cases phased out before it took effect. As long as segregation remained the prevailing system the tuberculosis movement was hindered in its effort to cure blacks. Black self-help was a useful doctrine in that it produced black leaders and mobilized the volunteer resources of the black community, but even within its own natural sphere of education it was really dependent upon white philanthropy. Its potential was even more limited when it came to the delivery of professional medical services. Formidable barriers prevented the proper training of black professional personnel, and the black community was too poor to support specialized institutions like sanatoria on a large scale. The leaders of the tuberculosis movement struggled with the difficult questions of race policy in an open and sustained dialogue, and the movement gradually improved its response to the needs of blacks. One must conclude, however, that tuberculosis workers were by no means out on the front line of battle for radical social change, but were seeking to accomplish their medical goals without unduly upsetting the existing social structure. Their success was limited; in fact, the persistent disparity in the tuberculosis morbidity of the two races is still a reminder of society's unfulfilled obligation toward black Americans.

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[73] Fifty agencies were listed, including most of the other major Negro rights organizations. The National Urban League was there, as was the National Medical Association. *National Negro Health News*, Oct.-Dec., 1936, *4*(4): 6.

[74] Elaine Ellis, "Tuberculosis among Negroes," pp. 112, 125.

[75] Delaware State Board of Health, Annual Report, 1941, pp. 64-65.

[76] W. Montague Cobb, *Medical Care and the Plight of the Negro* (New York NAACP, 1947) Also, "The National Health Program of the NAACP," *J. Nat. Med. Assn.*, 1953, *45*(5), 333-39, esp. p. 335.

[77] Cobb, "The Black Physician in America," pp. 915-16

Acknowledgments

Thanks are due to Drs. John B. Blake, James H. Cassedy and Peter D. Olch of the National Library of Medicine, whose course introduced me to the history of medicine and prompted the writing of this paper, but especially to Dr. Cassedy, who provided both encouragement and pertinent criticism since the project's inception. I am also grateful to Dr. Leslie A. Falk of Meharry Medical College for his kind invitation to Nashville in April 1974, where I had the opportunity to present the paper to his students and colleagues.

SOCIAL POLICY AND CITY POLITICS: TUBERCULOSIS REPORTING IN NEW YORK, 1889-1900*

DANIEL M. FOX

In 1901, Dr. Robert Koch of Berlin complained to Dr. Hermann Biggs of New York about opposition among German physicians to a proposed law requiring "compulsory reporting of such cases of tuberculosis as are in a communicable state." Nineteen years after isolating the tubercle bacillus, Koch found the implications of his research for public policy better developed in New York City than in his own country. "I wish to cite the example of the free American people," he told Biggs, a dominant figure in public health in New York, "who of their own free will accepted the limitation of their own liberties in the interest of the public health."[1]

Similarly, Sir Robert Philip, a leader in tuberculosis control in the United Kingdom, recalled that, in 1890, "I pressed strongly for compulsory notification of tuberculosis . . . . Yet more than twenty years passed before compulsory notification became the law of the land." Nowhere "has a more thorough plan of action been instituted than in the city of New York," Sir Robert said in 1908.[2]

By the 1890s Americans were accustomed to praise and envy from abroad for their enterprise, invention and, increasingly, for achievements in science, scholarship and the arts. It is not surprising to historians, just as it did not surprise contemporaries, that New York, the second largest city in the world, received attention for establishing the first diagnostic research laboratory in bacteriology administered by an agency of government. The laboratory was a superb technical innovation, a medico-scientific and political counterpart to the Brooklyn Bridge. But the innovation in public social policy praised by Koch and Philip and used as a model in the United States and abroad is not explained by conventional views of American society and public life.

American municipal government in the 1890s usually excited scorn, not envy, from leading men of science and public affairs at home and abroad. New

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* Presented at the 47th annual meeting of the American Association for the History of Medicine, Charleston, S C , May 4, 1974

[1] Robert Koch (Berlin) to Hermann M. Biggs (New York), May 26, 1901, quoted in C -E. A Winslow, *The Life of Hermann M. Biggs. Physician and Statesman of the Public Health* (Philadelphia Lea & Febiger, 1929), 178

[2] Sir Robert W Philip, *Collected Papers on Tuberculosis* (London: Oxford Univ. Press, 1937), 412, 63

York City in particular was generally held to be dominated by the limited and venal goals of the Tammany political machine led by Richard Croker. It is unusual to discover New York City pioneering in the use of the coercive power of government to protect citizens' health. The story of tuberculosis notification in New York suggests that American municipal reformers and their subsequent historians have too readily accepted James Bryce's supercilious judgment that municipal government constituted the most conspicuous failure in America.[3]

To public health advocates in the 1890s, notification for contagious or communicable disease was a necessary first step in effective social policy to protect the public's health. Notification provided essential epidemiological data and information about the acceptance of bacteriology among physicians. More important, the reports triggered subsequent activities by either private or public organizations. In tuberculosis control these activities included regular investigation and disinfection of sickrooms, education of patients and their families, removal of patients to sanatoria or hospitals and supervision of sanitary precautions in factories and shops. Private physicians would provide or coordinate these services for more affluent citizens, particularly when threatened with public assumption of neglected responsibilities. The State, it was generally agreed, was only obligated to provide direct services to the poor.[4]

The usual explanation for the primacy of New York City in tuberculosis control is derived from the concept of an idea whose time has come. A generation after Koch's discovery, public policy in Europe and the United States was based on the need to discover, report and control the bacillus. The inevitable happened first in New York mainly because of the statesmanship of Dr. Hermann M. Biggs and a few of his medical colleagues.[5] A corollary interpretation contrasts the sorry state of general government in New York with the "unyielding integrity and forward looking altruism" of a group of physicians "waging a crusade for public health." The corrupt men who ran all of city government except the Health Department were either baffled or impressed by these virtuous men of science.[6]

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[3] James Bryce, *The American Commonwealth* (London, 1888), II, 281.

[4] The most complete account is John S. Billings, *The Registration of Pulmonary Tuberculosis in New York City* (New York· Department of Health, 1912) The use of notification to measure support for scientific medicine among physicians in general practice is discussed in Hermann M. Biggs, "The Administrative Control of Tuberculosis," reprinted from *The Medical News*, February 20, 1904, 4. Biggs made this point on many occasions. In 1906, Philip, *op. cit.* (n. 2 above), 78-79, noted that "tuberculosis differs from all other notifiable diseases . . Cases are often not detected until long after infection has occurred . . the greatest practical difficulty in connection with notification is to achieve it sufficiently early "

[5] Winslow, *op. cit.* (n. 1 above), *passim;* S. Adolphus Knopf, *A History of the National Tuberculosis Association* (New York, N.T.A., 1922), 6-18 A general theory of innovation in public health in these terms is elaborated by George Rosen, *A History of Public Health* (New York: MD Publications, 1958), 150 Rosen posits a four stage process· (1) A social evil is recognized by an individual or a small influential group, (2) individuals take the initiative to develop the issues through studies and experiments; (3) these actions "enlighten and mold public opinion" and attract government attention; (4) agitation leads to government action and "if successful to legislation." Rosen notes that the model is oversimple but maintains its general validity

This interpretation, caricatured for argument, is suspect on analytical and factual grounds. It is anachronistic to read the twentieth century consensus about the etiology of tuberculosis into the events of the 1890s. Reasonable men disagreed about the validity and, more important, the interpretation of the research stimulated by Koch's discovery. Moreover, the eventual acceptance of compulsory notification as part of public social policy everywhere does not explain how and why New York City took precedence by more than a decade. Similar debates had different political results in other places.

The implication that scientific medicine neutralized the political process is suspect. Scientific knowledge is not transformed into policy and administrative arrangements without the conflict and bargaining that generally characterize the governmental process. It is difficult to explain why the control of some diseases, some hazards to health, should be placed above or aside from general politics while other concerns should, to the dismay of reformers, be part of the calculus of political interests. Tuberculosis, it may be urged, was exceptional: a major killer, a constant cause of anxiety. But so were alcoholism, adulterated food, and unsafe and unsanitary streets. Perhaps these evils are different from tuberculosis less because the disease agent is not a bacillus than because of differences in the strategies of political and community organization brought to the issues since the 1890s.

The conventional interpretation is also contradicted by data. Biggs' influence was a result of skillful use of the tools of conventional politics. With jobs and money to supplement the appeal of scientific medicine, he led an expanding constituency among New York physicians. The medical opponents of compulsory notification were similarly adept. The struggle for position, place and policy around the issues raised by tuberculosis control is of historical interest because it exemplifies the use of the techniques of the closed politics of bureaucracies and professional organizations to achieve measures for the general welfare.

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In May 1889, Commissioner of Health Dr. Joseph Bryant asked the Department's consulting pathologists, Drs. Biggs, T. Mitchell Prudden and

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[6] Wade W. Oliver, *The Man Who Lived For Tomorrow* (New York: Dutton, 1941), 418

Horace P. Loomis to report on tuberculosis. The report was timed to take advantage of the appointment of a new, sympathetic and politically astute president of the Board of Health, Charles G. Wilson, an eminent corporation lawyer. The pathologists asserted the validity of Koch's findings and declared tuberculosis both a "distinctly preventable disease" and "in very many cases a distinctly curable affection."[7]

Prevention and cure required Health Department action to inspect cattle, educate citizens in preventive methods, and disinfect rooms occupied by tuberculous patients. Compulsory notification of the Department by physicians who diagnosed cases of the disease was advocated by the pathologists in an early draft of the report. But the proposal was dropped, on Bryant's advice, after informal political and medical screening of the idea by several leading physicians indicated intense opposition.[8] The final report was accepted without significant controversy by the leading medical organizations in the city and both the professional and lay press.[9] Ten thousand copies were circulated.

Compulsory notification for cases of pulmonary tuberculosis diagnosed in public institutions was instituted four years later, in the winter of 1893-94. Physicians in private practice were "requested to notify" the department of all cases of the disease. A special group of medical inspectors to administer the new regulations were appointed by the Department the following year.[10] More important, the municipal laboratory, under the direction of Biggs and Dr. William Hallock Park, began to offer free sputum examinations to induce physicians to report suspected cases.[11] As in 1889, there was general praise for these innovations among the physicians quoted in the press and active in professional organizations.[12]

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[7] *Annual Report of the Board of Health of the Health Department of The City of New York for the Year Ending December 31, 1889* (New York, 1890), 38-40 (Hereafter cited as Health Department, *Report*, year). Wilson was appointed by Mayor Hugh J Grant on May 2, 1889, amid public accusations — including a story in the *New York Times* that he was corrupt. New York City, Municipal Archives and Records Center, Early Mayors' Papers, Health, 1885-1890, contains revealing material about Wilson's political connections and skill. Biggs took sole credit for initiating the pathologists' report in "The Registration of Tuberculosis," reprinted from the *Philadelphia Med J.*, Dec 1, 1900, 1.

[8] The earliest eyewitness account of the informal screening is Hermann M Biggs and John H. Huddleston, "The Sanitary Supervision of Tuberculosis as Practiced by the New York City Board of Health," reprinted from *Am. J Med. Sci*, Jan. 1895, M.S *109:* 17. Knopf, *op cit.* (n. 5 above), 6, reports that Bryant communicated with twelve physicians of whom only two, Drs. Frank P. Foster and E. G Janeway, supported notification. Biggs gives the number canvassed as twenty-four, of whom only five or six replied, all but two opposing notification.

[9] "The Germs of Tuberculosis," *The New York Times*, editorial, June 7, 1889; 4; J Hilgard Tyndale, "Pulmonary Consumption and the Board of Health, *New York Med J*, Oct. 18, 1890, *52:* 419-20.

[10] Health Department, *Report*, 1893, 38-40. The best secondary source for the details of the notification controversy is Winslow, *op. cit* (n. 1 above), ch IX

[11] Hermann M. Biggs, "Compulsory Notification and Registration of Tuberculosis," Discussion Before the Advisory Council of the National Association for the Study and Prevention of Tuberculosis, Washington, D.C., May 6, 1907, 6 Philip, *op cit* (n 2 above), 206, in 1913, stressed the frequency with which practitioners relying exclusively on signs and symptoms failed to diagnose tuberculosis.

When notification of the Department by physicians was made compulsory for all cases of pulmonary tuberculosis in January 1897, strong protests were made at medical meetings and in the press. Patients' rights and physicians' obligations and livelihoods were threatened, it was alleged, by this abuse of the police power of the state. Resolutions were passed; threats were made about legislative combat to restrict the powers of the Health Department; personal slurs on Biggs and his associates were spoken more publicly than is customary in medical politics.[13] At the height of the controversy, Prudden described the opposition to Dr. E. G. Trudeau, as the "little scattering gang of purps" who longed for the "good old times when a patient with tuberculosis could be lulled into a sense of security for a few months more."[14] Biggs, always aggressive but usually restricting his attacks to physicians' ideas rather than their personal traits, ascribed the opposition to "timidity, selfishness, ignorance" — a trinity he later softened to "tradition, prejudice and sentiment."[15]

A compromise which both deferred and made inevitable the achievement of compulsory notification was negotiated by Prudden and his successor as president of the Academy of Medicine, Dr. E. G. Janeway. The compromise included delay in the enforcement of compulsory notification and more formal and frequent consultation between the Department of Health and leaders of the medical profession. Penalties for failure to notify were enforced selectively over the decade.[16] By 1907, when the Board of Health extended the notification requirement to all forms of tuberculosis, the achievements of the public health physicians and their supporters, and the international recognition they received, were matters of pride and self-congratulation to the medical profession of New York City.[17]

Notification did not impose severe administrative burdens on physicians and only violated the confidentiality of their relationship with low-income patients. Initial and yearly follow-up reports were made on post cards supplied by the Health Department. Inspectors were sent only on physicians' request, or when the patient lived in a tenement or lodging house. When cases were reported by citizens or by employees of other departments and charitable organizations, the Department's inspector first tried to locate and confer with the patients' physicans.[18]

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[12] Winslow, *op cit.* (n. 1 above), 131-137

[13] *Sanitary Code of the City of New York*, 1897, sec 225, for documentation of the controversy see Winslow, *op. cit.* (n 1 above), 143-149 and below, notes 71-90

[14] T Mitchell Prudden (New York City) to Edward Livingston Trudeau (Saranac Lake), January 22, 1897, *Biographical Sketches and Letters of T. Mitchell Prudden, M.D.* (New Haven· Yale Univ. Press, 1927), 232

[15] Hermann M. Biggs, "Sanitary Science, the Medical Profession and the Public," reprinted from *Med News*, Jan 8, 1898, 10; Biggs, "The Registration," (n. 7 above), 16

[16] See below, notes 19-20

[17] Winslow, Knopf, (n. 1 & 5 above), *passim;* Charles V. Chapin, "History of State and Municipal Control of Disease," in P. Ravenel ed., *A Half Century of Public Health* (New York, 1921), 143.

Enforcement of compulsory notification was cautious and selective, as specified in the Prudden-Janeway compromise. The strategy was "to continually increase the strictness of enforcement," Biggs recalled in 1909. Physicians who failed to report cases which appeared as tuberculosis on death certificates received letters calling attention to the law and asked for an explanation of the discrepancy. Several physicians were summoned before the Board of Health to explain their negligence.[19] Apparently a few were "defiant." During the first decade of the compulsory notification, Biggs reported in 1907, six recalcitrant physicians were fined between fifty and two hundred dollars each.[20]

The public health advocates were satisfied that reporting was increasingly accurate as a result of the spread of scientific knowledge among physicians and patients, gentle peer pressure, and the inducement of free sputum examinations. In the 1897 controversy, the advocates of notification ignored charges that even dispensary physicians disregarded the 1893 regulations. By 1902, the Department claimed that two-thirds of the cases in Manhattan and the Bronx were reported. In 1908, Biggs estimated that reporting was ninety percent accurate. Both estimates were, however, speculative.[21]

Notification was generally justified by citing encouraging statistics about the number of cases reported and the decline in the death rate from tuberculosis. The number of new cases reported increased from 8,559 to 1898 to 32,065 in 1910. when the total of known cases was 70,260, the highest ever recorded in the city. The number of sputum examinations increased from 2,920 in 1898 to approximately 40,000 in 1910. During this time the total population of the city increased by a smaller percentage, about one-third. More important, the death rate from tuberculosis maintained the decline that had begun around 1880 and appeared to have accelerated because of the public health campaigns of the 1890s. Historians and epidemiologists are uncertain about the causes of the declining incidence of tuberculosis in the twentieth century. But public officials and leaders of voluntary associations at the turn of the century had good reason to take most of the credit for it.[22]

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[18] Ernest J. Lederle, Hermann M Biggs, "The administrative control of tuberculosis," *Charities*, Dec. 12, 1903, *11:* 571-574

[19] Hermann M. Biggs, *The Administrative Control of Tuberculosis in New York City* (New York: Department of Health, 1909), 5.

[20] Biggs, "Compulsory Notification" (n. 11 above), 10. This statement contradicts Biggs' declaration to the British Congress on Tuberculosis in 1902 that no prosecutions were either made or, more important, intended. ("Notification of Tuberculosis," *Transactions of the British Congress on Tuberculosis*, 1902, *1:* 10.) Presumably enforcement policy changed as notification became a source of New York medical pride.

[21] Health Department, *Report*, 1896, 26; "Resolution of the Medical Board of the West Side German Dispensary," *Med. Record*, March 20, 1897, *51*. 431-32. " now more than 50% of the physicians make no report." Lederle and Biggs, (n 10 above), 570; Hermann M. Biggs, *Brief History of the Campaign Against Tuberculosis in New York City* (New York: Department of Health, 1908), 10.

Statistical data, combined with new bacteriological knowledge, encouraged strategists in the first campaigns against tuberculosis in New York to press for measures for the general welfare of all social and ethnic groups in the city rather than special measures for the poor. In 1890, the year after the Department of Health declared the disease to be both preventable and curable, the disease was the most destructive killer in the city. In that year, 5,500 people died of tuberculosis; compared with 5,000 from pneumonia and just under a thousand from cancer. Tuberculosis struck the young disproportionately; only a quarter of those dying of the disease were over forty-five years of age. The most threatened group was males between the ages of thirty and thirty-five.[23] Although the death rate declined steadily after 1880, population growth brought a steady increase in the total number of deaths from tuberculosis in the city. Not until 1925 did the total number of deaths from the disease in the city clearly begin to decline. Moreover, the ratio of deaths from tuberculosis to total deaths increased or remained constant until the second decade of this century.[24]

While tuberculosis threatened everyone in the city, the death rate in the poorest areas was almost twice what it was for the city as a whole. There was, however, considerable ethnic variation, a result less of degrees of poverty than of the resistance developed through exposure to the disease in the past generations. Black New Yorkers were most in jeopardy; Jews least. The Irish, Scottish, Bohemian and Scandinavian groups were considerably more endangered than Italians. But native-born whites were more likely to succumb than either Hungarians or Russian Jews.[25]

Epidemiological statistics were useful for political arithmetic only if the perceptions of tuberculosis among physicians and laymen were also taken into account. When Koch announced the isolation of the bacillus in Berlin in 1882, many New York physicians were not convinced he had found the cause of a specific disease. The two leading medical colleges in the city taught contradictory doctrines: at one it was argued that the "development of tubercles was merely a symptom of various diseases"; at the other that tuberculosis was a single disease.[26] Many physicians were not impressed when, in 1883, T. Mitchell Prudden at the College of Physicians and Surgeons and Austin Flint, Sr., William H. Welch, and Biggs at the Bellevue Hospital Medical School published findings which confirmed Koch's work.[27]

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[22] Godias J. Drolet and Anthony M. Lowell, *A Half Century's Progress Against Tuberculosis in New York City, 1900-1950* (New York: Tuberculosis and Health Association, mimeo., 1952), v, vi, xxxiii, xlviii; Lederle and Biggs (n 10 above), 570. Doubts about the efficacy of public action in the control of tuberculosis are expressed in Richard H Shryock, *National Tuberculosis Association, 1904-1954* (New York: N T A., 1957), 306, and Anthony M. Lowell et al., *Tuberculosis* (Cambridge, Mass.: Harvard Univ Press., 1969), 15.

[23] Health Department, *Report*, 1890, 207.

[24] Drolet and Lowell, *op. cit.*, (n 22 above), iii, xxvi; Lederle and Biggs, *op. cit.* (n. 10 above), 571.

[25] John Shaw Billings, *Vital Statistics of New York City and Brooklyn . . . Ending May 31, 1890*, 53rd Cong., 1st Sess., House Misc Doc. (Washington, 1894), quoted by Drolet and Lowell, *op. cit.* (n. 22 above), li, lxiv.

There were strong arguments for the opinion that tuberculosis was a result of inherited constitutional traits. In the absence of agreement about the frame of reference with which to view clinical evidence, data that would later be regarded as confirming the bacterial origin of the disease were interpreted in support of the opposing view. These data included the presence of the disease in several generations of a family, the freedom from infection of many employees in hospitals for tuberculous patients, the transmission of the disease to spouses, and the lack of human infection from direct contact with meat from tuberculous cattle.[28]

Competing views of the etiology of tuberculosis provide a partial explanation for the debate among medical men about appropriate public policy to prevent and control the disease. The bacterial view meant, as contagionism had throughout history, state intervention in the lives of citizens: reporting, inspection, isolation — the administrative devices by which citizens are deprived of liberties in the interests of society. The hereditary view of the transmission of tuberculosis, on the other hand, justified public restraint. Tuberculosis, long a stigmatizing disease, seemed even more punishing to its victims as a result of the bureaucratic interference that followed from the theories of Koch and his followers.[29]

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[26] C -E. A. Winslow, *The Conquest of Epidemic Disease* (Princeton, N. J.: Princeton Univ. Press, 1943, New York, 1967), 309

[27] H. R M Landis, "The reception of Koch's discovery in the United States," *Annals Med. Hist.* Sept. 1932, *4*. 533.

[28] *Ibid.*, 535-537 Leading New York physicians did not share the temporary optimism stimulated in 1890 when Koch announced that tuberculin could be used both to detect and to cure the disease. If tuberculin had met Koch's initial expectations, tuberculosis control might have been accomplished with a minimum of political and bureaucratic elaboration. But T Mitchell Prudden early declared himself unconvinced by Koch's claims and Abraham Jacobi, an influential figure in New York medicine, conducted and published a thorough study which suggested that, although tuberculin produced mixed effects, it was most useful in treating incipient cases of the disease Moreover, E. L. Trudeau argued cogently and with wide influence in New York that the results of treatment with tuberculin "even in selected cases are, on the whole, but little better than are usually obtained by the climactic and out-of-door plan His research suggested that nutrition was a more important variable than treatment with tuberculin. In combination, these positions reinforced the arguments for compulsory notification. A. Jacobi, *Transactions of the Medical Society of New York*, 1891, 91-133. E A. Trudeau, "Results of the employment of tuberculin and its modifications at the Adirondack Cottage Sanitarium," *Med News*, 1856, *14:* 298-300

[29] Erwin H Ackerknecht, *Medicine at the Paris Hospital*, 1794-1848 (Baltimore: Johns Hopkins Press, 1967),

For middle and working class citizens of New York City in the 1890s the bate over compulsory notification involved major anxieties of daily life. ey had to balance their instinctive contagionism, the traditions of folk edicine confirmed by science and popularized in the press, against their fear the police power of the state. They weighed the desire to have all possible tions taken against the disease as early as possible against the fear that knowledged tuberculosis, because it was an exclusion in most life insurance licies, would leave families destitute.[30]

The issues were equally intense for physicians. The controversy threatened resent and future livelihood — not just income but the organization of edical practice and the perceptions of laity from which income, status, and elf-esteem were derived. At a time when their incomes were declining and e profession was fluid to the point of chaos, the new public policy was reatening. Patients might shop for physicians who either did not report or, ore likely, gave optimistic diagnoses.[31] City medical inspectors, checking n a physician's report or failure to report might ask questions that would use patients to question his judgment — questions leading, in at least one stance, to nonpayment of fees.[32] The impersonal laboratory would review nd challenge judgments made on the basis of years of training and practice.[33] atients and the fees physicians had earned from attending them at home ould be absorbed by the growing apparatus of hospitals and sanatoria.[34] ivileged communication between physicians and patients, protected by a uch admired New York statute, might be eroded by administrative w-making.[35] Finally, in this atmosphere of anxiety and threat, there were ounds for general practitioners, more than two thousand in the city, to fear at their incomes and freedom were under siege from a growing coalition of ecialists, medical college faculty, and experts in public health.

III

The medical profession in New York in the 1890s was under both external nd internal stress. The years 1893 to 1897, when the notification controversy as most bitter, were a time of severe economic depression. In 1893, the year

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6-160; Howard D. Kramer, "The germ theory and the early public health program in the United States," *Bull. ist Med.*, May-June, 1948, *22:* 233-247.

[30] Winslow, *Conquest* (n. 26 above), x-xi; Biggs and Huddleston, *op. cit.*, 10, (n. 8 above), for the most mplete statement on insurance economics.

[31] S. B. Taylor, "The duty of a physician to a tubercular patient and to the public," *Columbus Med. J.*, 1897, 18-19.

[32] Letter to the Editor, Stuyvesant F. Morris, M.D., *New York Med. J.*, Dec. 2, 1893, *58:* 666.

[33] George F. Shrady, "The health board and compulsory reports," *Med. Record*, Feb. 27, 1897, *51:* 305-06.

[34] See below, notes 40-41.

[35] "The physician-patient privilege," *Northwestern University Law Review*, May-June, 1961, *56.* 263-264.

voluntary reporting by private physicians was instituted, some 500 banks and 16,000 businesses failed across the nation. Estimates of unemployment in the winter of 1893-94 averaged about two million.[36] In New York, the Board of Health reported 314 suicides, a record number.[37] More threatening to the collection of physicians' fees, Professor Richmond Mayo-Smith, a conservative statistician at Columbia University, reported to Mayor Thomas Gilroy in February 1894 that 48,681 families, made up of 206,701 individuals, reported one or more members of the household out of work. According to Mayo-Smith, 67,592 New Yorkers were unemployed.[38] In addition, 20,000 homeless vagrants strained the accommodations of police stations and philanthropic shelters. Less than a quarter of the manufacturing plants in the city operated at full capacity.[39]

Anxious physicians, feeling their status slipping as their incomes diminished, saw in tuberculosis reporting another example of what, in direct analogy to contemporary developments in the organization of commerce and industry, they regarded as vertical and horizontal combinations in restraint of trade. This attitude was a constant theme in addresses to medical organizations. "The improved condition of the public health," in particular the "eradication or limitation of disease by the Health Department of this City" contributed to the decline in physicians' incomes, Dr. Charles Phelps told the State Medical Association in 1898. Moreover, the public health physicians and their allies on the medical school faculties increasingly dominated public hospitals and dispensaries and even many small hospitals. Clinics, by eliminating means tests, were an artful abuse of charity designed to pauperize the affluent and distribute the best care below market cost. It was "naked application to the practice of medicine of the principle upon which mercantile trusts are founded." A recurrent American image, the welfare cheat, was evoked for medical audiences. Where phantom Cadillacs would later park, "dispensary patients leave their carriages and servants around the nearby corner of a street."[40] According to the president of the New York County Medical Society, 737,171 New Yorkers, thirty-nine percent of the population, received free care in 1895.[41]

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[36] Samuel Rezneck, "Unemployment, unrest and relief in the United States during the depression of 1893-97," *J. Political Economy*, Aug. 1953, *61*. 327-328.

[37] Health Department, *Report*, 1893, 17.

[38] Richmond Mayo-Smith to Seth Low, transmitted to Thomas Gilroy, February 6, 1894, New York City Municipal Archives, Early Mayors' Papers, Box 6144.

[39] James B Lane, "Jacob A Riis and scientific philanthropy during the progressive era," *Social Service Review*, March 1973, *47*. 37.

[40] Charles Phelps, "The causes of a decline in the average income of general practitioners," *Med News*, *1897, 71:* 528-531.

[41] Landon Carter Gray, "Inaugural Address of President," Minutes, The Medical Society of the County of

The general practitioners, or at least their spokesmen, also blamed their anxieties on the condition of the national economy, competition from unlicensed practitioners, fraternal undercutting of fees and unethical dispensing of pharmacists. The great medical coalition of the early twentieth century cannot easily be discerned in the 1890s: the temporary union of academics, specialists and generalists to limit the size of the profession by reducing the number — or, to the same end, raising the quality — of medical schools.

New York medicine on the eve of the twentieth century was fluid, chaotic, and riddled with factions. This disorganization may have been more influenial than the mystique of modern science in enabling the innovations in tuberculosis control to occur.

The number of regular physicians in the city in any year in the 1890s can only be estimated. For 1894-95, for example, most New York medical leaders claimed some 3,000 practitioners. More likely they meant the metropolitan area, since the *Medical Register: New York, New Jersey and Connecticut* ists that number for the area, but only about 2,000 as practicing in the city, then limited to Manhattan and the Bronx.[42]

The *Medical Register* reveals more of the fluidity of the profession than the carefully chosen words of the leaders of medical organizations and factions. The physicians listed included everyone eligible for membership in either of the two regulars' organizations, the County Society and the County Association. About ten percent of the physicians in the city left New York, retired or died each year in the decade. In 1895, for example, 195 physicians gave up practices in the city; 104 of these, about five percent, had not communicated their present addresses to their organizations or to the *Register*.[43]

The fluidity and uncertainty caused by turnover and disappearance was ncreased by the antagonism between the Society and the Association, at both County and State levels. The break, which lasted from 1882 to 1896, was, on one level, the result of disagreement about the consultation clause in the American Medical Association Code of Ethics. The AMA Code, reflecting its origin in the controversies of mid-century, prohibited consultation with sectarian practitioners. By the 1880s many New York physicians felt it to be both economically and therapeutically necessary to consult and be consulted by homeopaths. The State Society liberalized the prohibition in 1882. As a result its delegates were refused seats at the annual meeting of the AMA. The leadership of the Society was, however, ahead of the members: a subsequent mail ballot indicated that those physicians who voted preferred the AMA code

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New York, November 23, 1896, 138, New York Academy of Medicine Library.

[42] *Medical Register, New York, New Jersey and Connecticut*, xxxiii, 1895-96, *passim*.

[43] *Ibid.*, lxv-lxvi,

by a margin of two to one. But the numbers in each group were sufficient t sustain two state organizations and their county affiliates for twenty years.[4]

The organizers of the statewide challenge to the AMA, members of the Ne York County Society's Committee on Ethics were, however, playing fc larger stakes than consultation with homeopaths. The New York City me sought to trade freedom to consult with homeopaths for more restraint o physicians' advertising and sale of proprietary secret remedies. They felt tha legitimizing existing consultation practices was a small price to pay for greate control over the public behavior of physicians. Though the later stages of th controversy seemed to be entirely about homeopathy, the first resolution introduced to the State Society made the ethics of consultation secondary t the issue of restraining commercialization.[45]

The division between the Society and the Association, in addition to furthe fragmenting the profession, demonstrated a political principle that was valuable in the battle for notification of tuberculosis. In professional politics, strong minority with access to sufficient patronage and publicity to sustain it members' livelihoods and respectability could achieve its goals just as surely a a majority coalition can in open politics. Professional stalemate makes prudent legislators neutral. There could be no intervention on behalf of th general public interest when even the New York Academy of Medicine, th most prestigious group of regular physicians in the State, first gave unequivocal support to the AMA Code and then, under intense pressure, tacitl accepted the dual organization of the profession.[46] Among those whose late behavior indicated understanding of the power of a well-organized professional minority was Dr. Joseph Bryant, a member of the County Society' Committee on Ethics in the early 1880s, sponsor of the first report on tuberculosis as Commissioner of Health in 1889, and a leading architect of th notification compromises of the 1890s.

IV

Medical and general politics were interdependent in the controversy ove compulsory notification. Tuberculosis control was more important in New Yorkers' lives than whether physicians were free to consult practitioners whom their patients freely consulted. Medical advertising was more im-

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[44] James J. Walsh, *History of the Medical Society of the State of New York* (Brooklyn: Published by the Society, 1907), 205-06, H G. Piffard, "The status of the medical profession in the State of New York," *New York Med. J*, 1883, *37* 400-04, 456-457, 484-87, 567-71, 589-63; xxviii, 1883, *38:* 372-7, 568-74

[45] *New York Med J*, 1883, *38:* 567 ff.

[46] *Ibid.*, 375, 573; Philip van Ingen, *The New York Academy of Medicine* (New York. Columbia Univ. Press, 1949), 181-190.

mediately painful to physicians than to the public. Notification and its consequences required the expenditure of public funds and, because of the sanitary and therapeutic measures that followed from it, entailed costs for families and institutions.

The debate about compulsory notification was, however, conducted primarily within the medical profession and around competing interpretations of science, technology and professional ethics. Problems in the administrative control of disease could not easily be dramatized to compete successfully for broad public attention. Moreover, the scientific and professional issues were matters of deep conviction to many members of the medical profession. The politics of tuberculosis was rooted in serious philosophical and scientific controversy.

Although the philosophical controversy was not unique to New York, the achievement of compulsory notification was. Rather than risk interpretations which require the assertion that physicians and public officials in New York City were more enlightened or more public-spirited than their counterparts in, for example, Berlin, or Edinburgh, or Paris, it is useful to ask how the City differed from other places. An essential difference was that the techniques of American municipal politics, at a particularly high level of development in New York City in the 1890s, were available for a wide variety of goals. Through the skillful manipulation of patronage and prestige, the medical profession in the city was organized to support, tolerate or passively resist notification some years before conversion to the scientific basis of notification occurred.

The public health innovators faced a difficult political challenge. They had to create sufficient support for compulsory notification within the city to prevent the State legislature from restricting the powers of the Board of Health. The Board's power to make social policy in the form of amendments to the Sanitary Code was derived from the legislature. The legislature, dominated by Republicans, was eager for opportunities to discredit agencies of the city's government, as a way to diminish Tammany's power. If the medical enemies of notification could present it as a power grab by a band of arrogant radicals who did business with Tammany, the legislature would intervene. If, on the other hand, the notification controversy became a dispute among learned and respectable physicians, all of whom had loyal patients, prudent Republicans would look to other issues.

Biggs, Prudden and their allies avoided antagonizing laymen. The Health Department offered useful services to tuberculous citizens and their families without challenging any interest group except physicians. The Department was especially sensitive to the anxieties of a city population eighty percent foreign born or first generation. Circulars were printed in a variety of languages. Department personnel who visited the homes of tubercular patients were multi-lingual or accompanied by interpreters. Patients were not hospitalized without careful consideration of the economic and emotional effects on their families.[47]

Making it difficult for physician opponents to build a lay constituency was essential but not sufficient to institutionalize reform. Physicians had to be involved in the process of notification and control, whether voluntarily or grudgingly, for the new measures to have any significant effect on citizens' health. Moreover, it would be difficult to maintain lay support if the legitimacy of the new measures was eroded by constant medical attack.

Lay support was maintained and solidified by mutually satisfactory relationships with the dominant factions in general politics. These same relationships provided tools to build a sufficiently solid medical constituency to achieve more effective control of tuberculosis than in any other political jurisdiction in the world at that time.

The New York public health innovators in the 1890s were intensely political and selectively partisan. The intersection of medical, bureaucratic and partisan politics was as fast and dangerous in the nineties as at any time in the twentieth century. Later claims to apolitical status by the managers of public health innovation and their historians have obscured the strategies and tactics of institutional change on behalf of disease control in the 1890s.

The innovations for which the Health Department received international recognition were made, with one exception, when city government was controlled by Tammany Hall, led by Richard Croker. The first pathologists' report was written in the administration of Mayor Hugh Grant; the bacteriological laboratory and programs to control diphtheria and tuberculosis were instituted under Mayor Thomas Gilroy. Only the 1897 regulation notification for tuberculosis was issued with a reform mayor, William Strong, in office. There is no evidence that Strong or men identified with him were involved in the controversy, which concluded with the consolidation of the measures envied by Robert Koch and Robert Philip during the administrations of Tammany Mayors Robert Van Wyck, and George B. McClellan, Jr.

The public health physicians were in touch with the major partisan actors. Joseph Bryant had ties to the state Democratic organization; serving, for example, in the ceremonial role of Surgeon-General to Governor Flower.[48] Dr. Alvah H. Doty, a veteran of the Health Department staff and a medical ower as Health Officer of the Port of New York, was close enough to Senator homas Platt's regular Republican organization for Theodore Roosevelt to nlist his support in his campaign to be appointed Assistant Secretary of the Navy.[49] Prudden had ties to anti-Tammany reformers but, like most physiians in the public health coalition, avoided public identification with the rganized reformers, whose support could generally be counted on throughut the decade of the nineties.[50] Biggs himself had a warm personal and rofessional relationship with Charles F. Murphy, then a Tammany District eader.[51]

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[47] The most complete summaries of Department strategies are Lederle and Biggs, *op cit*, (n 18 above), 572-73, and Biggs, "Administrative Control," *op cit.*, (n 19 above), 1-11

[48] Gordon Atkins, "Health, Housing and Poverty in New York City, 1865-1898," unpublished Ph.D. dissertation, Columbia University, 1947, 252

If Murphy assisted Biggs during the nineties it must have been as a trategist, not as a protector. Murphy, generally regarded as the ablest of ammany Leaders, did not become County Leader until 1902 or the "dominnt factor in the politics of New York State" until 1906. Through the nineties, e led the Tammany organization in the working class Gas House district, emoved in geographic and social distance from Biggs' consulting practice on Vest 58th Street and the arena of medical politics at the New York Academy n West 43rd. Both Biggs and Murphy were young and ambitious in the ineties; in their thirties, energetic, with highly developed technical skills, nd eager to take advantage of opportunities.[52]

Whether or not Biggs and Murphy collaborated in public health innovation, iggs was adept at practicing Murphy's principles of "thorough political rganization and all year round work."[53] Dr. James Alexander Miller, a oung Health Department physician in the late-nineties, recalled him as a 'practical realist who turned conditions as he found them to his own purposes vith uncanny skill." In addition, Biggs had flexible scruples. Both Miller and Villiam Hallock Park were recruited by Biggs. Both received civil service ppointments after taking examinations engineered by Biggs to insure that they would be selected. Miller, at the suggestion of Biggs and Park, arranged a alse address in the city to qualify for his job.[54] Park himself had gained some ndependence from Biggs by refusing to allow him to take credit for work Park ad done.[55]

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[49] Elting E Morison ed., *The Letters of Theodore Roosevelt* (Cambridge: Harvard Univ. Press, 1951-1954), , 587-88

[50] T. M. Prudden to Seth Low, November 11, 1901, in *Biographical Sketches*, 287 ff.

[51] Winslow, *Biggs*, (n. 1 above), 188; James Alexander Miller, "The beginnings of the American antituberculosis movement," *Am. Rev Tuberculosis*, 1943, *48*, 374.

[52] M. R. Werner, *Tammany Hall* (New York, 1928), 485, 516.

[53] "A Tribute to Plunkitt by the Leader of Tammany Hall," Charles F. Murphy, in William L. Riordan, *lunkitt of Tammany Hall* (New York. Dutton, 1906, 1963), xxvi.

[54] Miller, 374-75.

[55] Oliver, *op. cit.* (n. 6 above), 90.

Biggs used his political skill to define issues during the decade of controversy about tuberculosis notification. Although the results of notification were of greatest immediate benefit to the poor, Biggs refused to alienate potential support by taking sides in the controversies of the decade about society's responsibility to the poor. Notification was presented as a measure for the general welfare: debates about heredity and environment, self-help and charity, and the fit and the unfit were left to others. Similarly, Biggs and his colleagues never advocated regulations to require inspection and publication of health abuses in places of employment.

In his public statements, Biggs decorously sought to find physicians' price for acquiescence in compulsory notification. He generally offered incentives rather than punishment, praise rather than criticism. Free sputum examinations were designed to assist physicians in diagnosing their patients. Biggs was apologetic about not paying a fee for each case report, as was done for some contagious diseases in Europe. He offered services instead.[56] In the Health Department's 1893 Report, physicians were exonerated of the charge of participating in insurance fraud in order to collect their fees through a brilliant exercise in specious epidemiological logic. Writing for a medical journal a year later, however, Biggs described the way physicians falsified death certificates for victims of tuberculosis so that claims could be made on industrial life insurance policies. Enforcement of notification through legal penalties was gradual and selective, done more to caution than to punish.[57]

Most important, the Health Department became a source of financial benefit for an increasing number of New York physicians through the decade of the nineties. Amid a national depression and fears that oversupply of physicians contributed to declining income, the Department's importance to the medical economy of New York City grew steadily. Departmental patronage — an average of a quarter million dollars a year in full and part-time salaries — was undoubtedly dispensed to qualified men who were loyal to the party in power.[58] The patronage was, moreover, dispensed by a medical-bureaucratic leadership that had policy goals as well as skill at political organization. The combination of shared policy goals, intra-professional loyalty, and superb use of patronage enabled physicians with allegiance to competing political parties and factions to work together in the Department of Health. Most of the growth in personnel during the decade was incremental. There was relatively little turnover in the Health Department, in a period when an estimated twelve thousand city jobs were made available to the faithful after each election. The only well-publicized political purge of the Department during the 1890s left most of the senior leadership in charge.[59]

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[56] Hermann M. Biggs, "Sanitary Science, the Medical Profession and the Public," reprinted from *Med News*, Jan. 8, 1898, 14

[57] Health Department, *Report*, 1893, 16, Biggs and Huddleston, "The Sanitary Supervision (n. 8 above), 9-

[58] There is considerable evidence to suggest the involvement of the Department in partisan patronage Perhaps the most compelling is the testimony to the Mazet Committee of the State Legislature in 1899 (Report of the Special Committee of the Assembly, Appointed to Investigate the Public Offices and Departments of the City of New York, 5 vols. [Albany, 1900], 917, 3807-14, 4012, 5198)

The Board of Health, the four member body that officially made policy for the Department and the city, was continuous in personnel and responsiveness to the policy interests of the public health innovators throughout the decade. Charles G. Wilson remained as President of the Board from 1889 to 1897. Bryant, Commissioner of Health from 1889 to 1893, was replaced from within the Department by Dr. Cyrus Edson. His successor, Dr. George Fowler, was a Department veteran. The third member of the Board, the Health Officer of the Port, changed three times in the decade. During the critical 1896-97 period the office was held by Dr. Alvah H. Doty, a former staff member of the Department. The fourth member was the President of the Board of Police, *ex officio;* a post held throughout the decade by men who, with the exception of Theodore Roosevelt (1895-96), could be counted on to mind Tammany's business. And Tammany's business, the circumstantial evidence indicates, was to help Biggs and his allies try to control pulmonary tuberculosis.

Good science and good health made good politics when, to paraphrase Tammany sage G. W. Plunkitt, the public health physicians saw their opportunities and took them. It was useful to avoid dealing with poverty as a general issue, to avoid exploring the ways in which exploitative employment and housing practices contribute to tuberculosis. This avoidance was also good pathology, as Biggs told the humanitarian readers of *The Forum* in 1894. Tuberculosis rates in the United States were lower than those in Europe because the poor lived under better sanitary conditions in this country. More important, after conducting countless autopsies in the city hospitals, Biggs was convinced that in "a considerable proportion of cases of incipient tuberculosis even among persons living under the most unfavorable conditions the disease becomes stationary or retrogressive." Thus environmental conditions, while significant, do not inevitably determine the outcome of the disease.[60] Biggs welcomed support from *The Forum's* constituency; he saw no reason to join it. Similarly, despite the clear relationship between tuberculosis and standards of living, Biggs and the New York innovators, unlike, for example, L. E. Flick and his Philadelphia associates, separated the anti-disease from the anti-poverty constituencies. For the New Yorkers it was sufficient that tuberculosis lesions appeared uptown. As Prudden wrote in *Harper's Magazine* in 1894, bacilli thrived in the "thick pile carpets" of the rich and others who accepted the "tyranny of things."[61]

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[59] Staff lists are printed in the Health Department *Reports* for most years in the 1890s. The most detailed account of the purge of 1892, developed mainly from Republican sources, is Atkins, 251-253 *The Medical Journal* covered the story circumspectly in its new columns (*e.g* "The City Board of Health," LV, April 23, 1892). Two months later, a pseudonymous physician wrote the *Medical Journal* that it has been "an open secret for years" that medical jobs, on the police force, Board of Health, visiting staffs of municipal hospitals were "matters of political influence" (July 9, 1892). The most penetrating analysis of New York patronage politics is Theodore Lowi, *At the Pleasure of the Mayor* (New York Free Press of Glencoe, 1964). Although Lowi's research begins in 1898 it is reasonable to apply his analysis to the immediately preceding years. Thus he makes the conventional, but somewhat misleading, remark that the Board of Health has never been a "Party enclave" (40-41), and then documents the way the Board's patronage has been used for partisan ends (*e.g*. 80-85) The point is not that the Board was above partisan politics, but rather that it was influenced by more than one party since patronage had to serve the ends of medical as well as general politics

The health of school children, always a grave concern, became a matter of good politics in the troubled winter of 1897. As the leadership of the County Medical Society and the Academy of Medicine made copy for the general and medical press with attacks on the Health Department for requiring notification for tuberculosis, the Department recruited 192 physicians — 150 of them residents of Manhattan and the Bronx — as School Inspectors. Each physician spent forty minutes a day in neighborhood schools examining children thought to be ill and referring them either to private physicians or dispensaries. For this work each physician was paid thirty dollars a month; a cost to the city of about $75,000 for the year.[62] Most of these physicians surely found it prudent to support the Board of Health's regulatory and reporting policies. Moreover, on their first day at work, they examined 4,225 children and found fourteen cases of diphtheria, three of measles, and fifty-five of parasitic diseases.[63]

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After almost a decade of preparation, advocates of compulsory notification took their greatest risk on January 19, 1897, when the Board of Health announced that "It shall be the duty of every physician in this city to report . . . in writing the name, sex, occupation and address' of every patient suspected of pulmonary tuberculosis.[64] Biggs, Prudden and their allies had reason to be gratified by the results of their efforts up to that date. The Health

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[60] Herman M. Biggs, "To rob consumption of its terrors," *The Forum*, 1894, *16*. 758-767

[61] T. Mitchell Prudden, "Tuberculosis and its prevention," *Harper's Magazine*, March 1894, *88*. 630-7

[62] Health Department, *Report*, 1898, 43.

[63] A. W Smith, "The economic worth of the physicians," *New York Med. J* , 1897, *66:* 827.

[64] The full text of the recommendations approved by the Board was reprinted in the *Medical Journal*, Jan 23, 1897, *65*. 130-32.

Department's achievements were attracting international attention. Within the city, the past year had been encouraging. In May 1896 the Board adopted New York's first anti-spitting ordinance. A month earlier, the State Board of Health had adopted a plan, prepared by Doty, Biggs and Prudden, to control bovine tuberculosis. Support was growing for a municipal tuberculosis hospital.[65]

There was, moreover, empirical evidence that the medical profession was beginning to accept tuberculosis as a communicable disease and the analysis of sputum as a diagnostic tool. Although the number of deaths from tuberculosis in the city increased in 1895, two years after the first reporting regulations, the rise was attributed to the high incidence of influenza in 1894 and 1895.[66] The reporting regulations may also have stimulated greater honesty among physicians in filling out death certificates — particularly physicians serving charitable institutions, who were legally obligated to report cases. The number of cases reported by public institutions increased from 3,985 in 1894 to 7,349 in 1896. Perhaps more significant, the number of cases voluntarily reported by private physicians increased from 278 in 1894 to 985 in 1896.[67] Biggs wrote jubilantly to Park in October of that year: "The tuberculosis work has increased very much — sometimes fifteen or twenty specimens a day."[68]

Political considerations may have contributed to timing the decision to require notification. The presidency of the Academy of Medicine was about to pass from one friend of public tuberculosis control, Joseph Bryant, to another, E. G. Janeway. Academy elections in these years were hard fought; the moment of victory was a time of exhaustion for the defeated faction.[69] Moreover, the imminent hiring of school medical inspectors meant new patronage for the Health Department. In addition, Greater New York would be created within a year under a recently revised city charter, adding the practitioners of three additional counties to the calculations of public health strategists.

At the end of 1896, the leading men in the Department of Health had a sure sense of whom they did and did not need to achieve their ends. Although reformer William Strong was still mayor, they could count on his constituency to support tuberculosis control on moral and scientific grounds. Other groups were less certain. An early draft of the Department's *Report* for 1896, in which the prose of some naive enthusiast was edited for political impact by an unknown superior, demonstrates the expertise with which the public health advocates entered the critical days, just ahead, of the struggle for compulsory notification. References to "business and civil service principles" and "public approval" were deleted. A boast about the immunity achieved because free smallpox vaccine was distributed to the poor was softened. Statements about the Department's production of diphtheria anti-toxin were eliminated, in order to avoid irritating physicians who criticized the Department for engaging in the practice of medicine. A discussion of "important statistical information in respect to the tenement house population" was deleted; so was a statement that the Department could name the owners of unsanitary buildings.[70] The reasoning which guided the editorial changes reveals mastery of the craft of political administration in the United States: avoid irritating individuals and groups you might need; do not flatter constituencies with nowhere else to go, in this case reformers, philanthropists, and civil service reformers.

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[65] Winslow, *Biggs*, (n. 1 above), 140-143.

[66] Health Department, *Report*, 1895, 82.

[67] *Ibid.*, 1896, 26.

[68] Oliver, *op. cit.* (n. 6 above), 154-55

[69] New York Academy of Medicine, Minutes of Meetings, *passim*, for bitterness of annual elections.

Opposition to compulsory notification was, as had been expected and prepared for, immediate and intense. Two days after publication of the regulations, on January 21, 1897, there was a long and bitter debate about them at a regular meeting of the Academy. At the close of the meeting, Prudden tried to take full advantage of his faction's strength. He moved that a committee of eight be appointed by the Chair (Joseph Bryant) of which the incoming President (E. G. Janeway) would be Chairman, "To consider and report to the academy upon tuberculosis and its relationship to the public welfare and the measures which should be adopted to curtail its ravages."[71] Privately Prudden was less polite. Writing to Trudeau the next day he described the meeting: "Of course the Fool was there in force, and went through his usual wailings over the aggressive tyrannies of the Health Board . . ."[72]

Compulsory notification was blasted as "offensively dictatorial," by Dr. George Shrady in a lead editorial in the nationally circulated *Medical Record*. Moreover, Shrady, a former Department of Health insider, called the regulations a result of a conspiracy of "a few workers in the Board to alarm the public unduly." Lashing out at Biggs, he accused the Board of "unduly magnifying the importance of its bacteriological department," even if tuberculosis was "in a very limited way . . . contagious."[73]

Three years earlier, Shrady had endorsed the first notification regulations, praising Biggs and hoping that "a more comprehensive scheme" would be instituted.[74] Why Shrady changed sides is not clear. But his vituperation reflected the views of a considerable faction — as did the *Medical Record's* dramatic silence about notification in the second half of 1897 and all of 1898. The only clue to Shrady's favorable attitude in 1893 was his obligation to the Board for hiring him as a consulting physician just a few months before his editorial; and less than a year after he had broken with the Department in protest against "political" (i.e. Tammany) interference in hiring policy.[75] Presumably he was an outsider again by 1897.

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[70] New York City Municipal Archives, "Memoranda — Health Department, 1896."

[71] New York Academy of Medicine, Minutes of Meetings, January 21, 1897, 509

[72] T. Mitchell Prudden to Edward L Trudeau, January 22, 1897, in *Biographical Sketches,* 235.

[73] George F Shrady, "The health board and compulsory reports," *Med Record,* Jan. 23, 1897, *51* 126-127.

Other journals, medical and lay, were more favorable. The *Medical News*, for example, praised the decision to provide medical inspection for school children in a lead editorial the week after the new reporting requirements were announced. In March, before the Academy or the Medical Society took action, the *News* supported the Board's policy as "wise and judicious." The *Medical Journal*, with the largest national circulation, was favorable but guarded. The lay press was generally favorable: the *Times*, for example endorsing the Board in January, the *Herald* in February.[76]

On March 18, 1897, the New York Academy addressed the issue postponed for maximum bargaining advantage by Prudden in January. The Committee of Eight, with Prudden and Janeway as spokesmen, suggested that the Board of Health "might wisely delay the enforcement of compulsory notification but should adopt more stringent measures for the care of all sputum . . . ." The Academy accepted their motion that the Board delay enforcement of — but not rescind — compulsory notification for tuberculosis.[77]

Concurrently, an Academy Committee of Five — which included Bryant, Janeway, and Dr. Stephen Smith, architect of the legislation creating the Board of Health three decades earlier — addressed the central issue raised by notification. Ostensibly reviewing the proposal to create a Greater New York Health Department, the Committee noted that the Department's powers had been "extraordinary" because the Board of Health had not used them in "injudicious" or "unwarranted" ways. The powers were "tolerated" because the Board had been "chary" of their use.

The message was clear. A compromise had been arranged. With Shrady leading a faction of outraged physicians advocating prior clearance of all

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[74] [George F Shrady], "The health department and pulmonary tuberculosis," *Med Record*, Dec. 23, 1893, *44*: 817

[75] *New York Med J*, Apr. 22, 1893, *57:* 621.

[76] "The tuberculosis question in New York," *The Medical News*, LXX, March 13, 1897, *70:* 341. Editorial, *New York Med J*, Jan. 23, 1897, *65:* 124; Editorial, *New York Herald*, *30*, February 26, 1897, "Fighting Consumption," *New York Times*, January 25, 1897, 6.

[77] New York Academy of Medicine, Minutes of Meetings, March 18, 1897, 521, *cf* van Ingen, *op cit.* (n 46 above), 263-64

Board of Health measures by the Academy and the Medical Society on one side, and Biggs leading a faction supporting notification on the other, the medical elite had decided to temporize one step beyond the *status quo,* leaving new but gently enforced regulations on the books.[78] By 1898 an official consulting board, chosen by the Academy was providing advice to the Health Department.[79]

The County Medical Society reinforced the compromise negotiated by the Academy's leaders. The president of the Society in 1897 and 1898 was Dr. Arthur M. Jacobus, a trustee of the Academy who two years earlier had nominated Bryant for its presidency.[80] On March 3, the Society received a report from its Committee on Hygiene endorsing compulsory notification provided Department inspectors did not communicate with patients without the consent of their attending physicians.[81] At the Society meeting of March 22, however, the Society rejected its Committee's report, declaring by unanimous vote that compulsory notification was "unnecessary, inexpedient, and unwise."[82]

Jacobus attacked the Health Department in his Presidential address to the Society in November, perhaps to assuage the general practitioners, who had more power in the Society than in the Academy. The Health Department, Jacobus fumed, was "usurping the duties, rights, and privileges of the medical profession," not only by notification for tuberculosis, but also by offering free care to affluent patients, free vaccinations to everyone, and free examinations to school children without regard to their parents' wealth. He assured his audience that the Society, represented by himself, and two other physicians — one of whom supported notification — had met with the Board and been assured that there would be "more stringent rule for the guidance of inspectors and other employees in their relations with practitioners and the patients of such."[83]

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[78] Academy, Minutes, 521

[79] Health Department, *Report,* n. p , list of members of "Consulting Board to the Board of Health" Iago Galdston wrote James Alexander Miller, April 5, 1943, to challenge the conventional interpretation of Biggs' righteousness and the Academy's opposition (New York Academy of Medicine, mss of Miller, *op. cit*). In Galdston's interpretation, the Prudden-Janeway compromise becomes even more important for institutional change "It is my impression that the Academy has been libelled on this score. Actually, the Academy Committee only asked for a delay in the application of the law. Furthermore, when you read the original law, you see that it was a thoroughly Prussian proposition, including all sorts of fines and dire threats. The spirit of the law was not unlike Biggs." Miller replied, April 7, 1943, disagreeing with Galdston, but basing his views solely on Biggs' statements to him

[80] New York Academy of Medicine, Minutes of Meetings, December 1895.

[81] "To Stay Consumption," *New York Times,* March 4, 1897, 12

[82] Minutes, Medical Society of the County of New York, March 22, 1897, 159-60

[83] Minutes, Medical Society, November 22, 1897, 209-214 Dr W. H. Katzenbach, who chaired the Committee on Hygiene and later served as a consultant to the Department of Health, supported notification.

Reasserting the Prudden-Janeway compromise and encouraging physicians with grievances to put them in writing to the Board, Jacobus continued talking loudly and carrying a small stick. Rhetoric subtracted, the Board had promised consultation and condemned the "abuse of power" but did not repeal the requirement for notification. Finally, Jacobus called on the State legislature to restrict the powers of the Health Department. A legislative committee was appointed which included Shrady, apparently to give credence to the Society's commitment to punish the Department.[84]

Jacobus, as a member of the ruling group in the Academy, probably knew that the legislative action was a charade. Only a token effort was made, and the attempt to restrict the powers of the Health Department was quickly dropped. A prominent member of the Medical Society, Dr. Frank Van Fleet, was accused of sabotaging the legislation but he, as was perhaps intended, though threatened with expulsion from the Society, survived to become chairman of its Board of Censors in 1900 and to represent it in merger negotiations with the Medical Association in 1904.[85]

The appeal to the legislature has considerable historiographic interest, however. Biggs later believed, or wanted others to believe, that he led a successful counter attack in Albany in 1898 and 1899. In 1900, to start the legend, he told a Philadelphia audience that the Medical Society had staged a "determined but unsuccessful" legislative effort.[86] An official history of the anti-tuberculosis movement, written two decades later by Dr. S. Adolphus Knopf and submitted to an editorial committee which included Biggs, declared: "During the legislative session of 1898 and 1899, Dr. Biggs spent much of the winter in Albany fighting" bills to restrict the Health Department's powers. Knopf continued that, following this struggle, Biggs arranged the Prudden-Janeway compromise approved by the Academy of Medicine.[87] Biggs' biographer, C.-E. A. Winslow, quoted Knopf's description of Biggs' Albany campaign while quietly restoring the Academy compromise to 1897 where it belonged.[88] Neither Knopf nor Winslow, though later close to Biggs, worked with him in 1897 and 1898. James Alexander Miller, who did, recalled in 1943 that, "The County Medical Society . . . tried to have a law passed in Albany which would prevent Biggs doing what he wanted to do . . . ." But

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[84] *Ibid.*, 217-220

[85] Minutes, Comitia Minora, The Medical Society of the County of New York, May 21, 1898, 3941; Minutes, Medical Society, October 24, 1898, 249, Report of the Joint Committee of Conference . . . Consolidating the Medical Society of the State of New York and the New York State Medical Association (1904), New York County Society Papers, New York Academy of Medicine

[86] Biggs, "The Registration" (n. 7 above), 15. The claim was repeated in Biggs, *The Administrative Control* (n. 19 above), (1907), 5.

[87] Knopf, *op. cit* (n. 5 above), 8-9.

[88] Winslow, *Biggs*, (n. 1 above), 148-49.

Miller's recollection was heavily dependent on what "Biggs told me personally on several occasions" in later years.[89]

The County Medical Society's Committee on Legislation tried to explain the political issue in its report on the "unfavorable" year of 1898 — when it could not obtain a quorum at any meeting. "Some few of our profession have not been in accord with the wishes of the majority and legislators are in the habit of asking for united action."[90] There was no profit and much risk for legislators to take sides in an intra-professional dispute in which the public's stake was not explicit. The legislators, experts in political arithmetic, knew that the "few members" who opposed the majority were a considerable faction.

Political arithmetic, a difficult task at any time, is even riskier in hindsight. It is clear which interest groups in the medical profession supported compulsory notification by 1897 and 1898. But it is also evident that, in New York medical politics of the 1890s, leadership was not hierarchical. The profession was fluid: membership shifted; two societies competed for membership; illicit practitioners flourished; physicians were anxious about their incomes.

The public health innovators had, at a cautious estimate, a constituency of at least 1,000 physicians; a third to almost a half, depending on whose total is accepted, of the regular physicians in the city. Constituency in this context has a narrow definition: physicians who had a financial reason to either support the Health Department or to remain neutral when it was attacked. The number 1,000 is computed as follows: at least fifty physicians who derived most of their income from the Department; about 250 who had welcome increases in income from school inspection or special summer work; a large proportion of the 950 who served for salary or other benefits in the hospitals and clinics staffed by the medical schools under a grant from the Board of Charities of city government or working in private hospitals or clinics which, because they treated the poor, had some dependency on city government.[91]

Leaving aside the ties particular Health Department leaders had to Tam-any, upstate Democrats, and the Platt Republican organization, it is probale that few state legislators cared to risk being accused of meddling in the iternal affairs of a learned profession; especially just five years after they had oted to give the medical profession extraordinary control of its own affairs. riendly legislators and political advisers might have suggested to the angry nembers of the New York County Society that they could do worse than live vith the compromise suggested by the Academy of Medicine.

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[89] Miller to Galdston, note 79, above: *cf.* Billings, *The Registration* (n. 4 above), 11. The alleged legislative battle is mentioned neither in the index to *The New York Times*, which covered with great care proposed legislation affecting the city, nor in *The Letters of Theodore Roosevelt*. Neither is it mentioned in the most thorough secondary source on New York government in the period, G Wallace Chessman, *Governor Theodore Roosevelt. The Albany Apprenticeship, 1898-1900* (Cambridge, Mass.: Harvard Univ. Press, 1965)

[90] Minutes, Medical Society, October 24, 1898, 268

[91] *Ibid*, 1896, n p., noting the transfer of appointing power from the city's Board of Charities to the medical Schools. The Medical Society protested, arguing that physicians appointed to municipal and charitable hospitals ought to be regulated by civil service. The Society's resolution emphasized the economic nexus by

Why did Biggs and his biographers fight an imaginary legislative battle? erhaps they felt the double pressure of the apolitical mythology of organized nedicine and the ideology of good government which spread among their ocial and economic peers in the early twentieth century. Exaggerating a egislative battle in Albany left the implication that compulsory notification vas protected by persuading Republicans to support it, not by using Tamnany methods, money, and muscle to win friends and neutralize enemies. In he twentieth century, public health became identified with sanctimonious olitics; linked to a moral and scientific crusade against inefficiency, ignornce and corruption. The valued skills became the ability to impress elites: narshalling evidence; excelling in debates; organizing for efficient administation. Political expertise, the ability to orchestrate self-interest across proessional, class and ethnic lines, was devalued as a strategy to achieve public ocial policy [92]

The managers of public health innovation in the 1890s later claimed better eform credentials than they had. As early as 1901, Prudden wrote the newly lected Fusion mayor, Seth Low, urging him to retain Hermann Biggs in the Iealth Department. Apparently confident that Low was ignorant of the olitics of public health, Prudden told him what he probably wanted to hear: ". . . until the advent of Tammany four years ago, the Health Department . . . ad for several years led the way in this country in the adoption of new nethods in the prevention of disease." Moreover, Prudden continued, Biggs lmost decided "he should drop the work when Tammany came in" but ecided to stay "in the hope that some of the hard won ground might be

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iking that even unsalaried physicians be under civil service The number 950 (949) is in *ibid* , November 23, 896, 138. The number 300 for the Health Department is based on staff lists in the *Report* for 1896 Testimony to e Mazet Committee (above, n. 58) indicated the total number of health department inspectors was over 600, it only a minority were physicians.

[92] Among the most helpful discussions of the politics of public health in the twentieth century are James H. assedy, *Charles V Chapin and the Public Health Movement* (Cambridge, Mass · Harvard Univ. Press, 1962); osen, *A History*, Shryock, *National Tuberculosis Association*, and Walter I Trattner, *Homer Folks*, (New ork: Columbia Univ Press, 1968)

saved."[93] Prudden's plea was successful, if inaccurate, Biggs having served in three Tammany administrations since 1889.

Biggs chose to be remembered, a hand-corrected typescript from his later years indicates, as a man above partisan politics, unshakeably dedicated to principle. Although nominally a "Cleveland Democrat," he had been offered jobs by all parties. "An ardent believer in Civil Service," Biggs chose his associates "without regard to their political affiliations."[94]

In 1902, after New York public health innovators had begun to identify their achievements with general political reform, Dr. William Osler praised them at an international congress. Osler, a recent convert to compulsory notification, noted the "difficulties" the New Yorkers "had to deal with in manipulating Tammany."[95] Whether from diplomacy or distance, Osler missed the central point and fostered the subsequent mythology. If Tammany was manipulated, it was with its consent; if the physicians were allowed to manipulate, it was because they accepted the rules and ethics of political professionals.

Robert Koch, speaking at the international tuberculosis congress a year earlier, argued that Biggs' achievement was the creation of a superb public health organization rather than the reporting requirement. Noting that Norway and Saxony had also mandated compulsory notification, Koch "most urgently" recommended the New York model to the "study and imitation of all municipal sanitary authorities."[96]

In the twentieth century, the New York model for the control of tuberculosis was widely praised for its structure and results. The model dominated medical and public debate so thoroughly that it helped to create an international medical and public consensus about the communicability of tuberculosis. But this consensus based on science, morality, and self-interest had little relationship to empirical evidence about how, to whom, and under what conditions the disease is communicable.[97] The model remains resistant to change, however. This resistance, whatever its later sources in bureaucratic territoriality, began when the New York model was sanctified as the inevitable result of scientific progress rather than as the skillful political response of concerned and ambitious men to hypotheses which appeared, for a time, to be in the interest of the public's health.

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[93] Prudden to Low, above, n. 50.

[94] "Herman M. Biggs," Anonymous typescript biographical sketch corrected in Biggs' own hand, New York Academy of Medicine, n.d., c 1920; cf. Winslow, *Biggs*, (n 1 above), *passim*.

[95] *Transactions of the British Congress on Tuberculosis*, 1902, *1*: 14. Osler equivocated in a widely reprinted debate on notification in 1894 (*Proceedings*, College of Physicians of Philadelphia, January 12, 1894; reprinted in *New York Med. J.*, Feb. 17, 1894, *59*: 221-222). But Osler emphatically supported compulsory notification by 1900; "On the study of tuberculosis," *Philadelphia Med. J* , Dec. 1, 1900, *6*: 1029-30. L E Flick was bitter about Osler's opposition, which he ascribed to Osler's "working in the interest of his friends," but grateful for his public apology, at a dinner in Paris in 1905 Ella M. E. Flick, *Beloved Crusader* (Philadelphia: Dorrance, 1944), 15-16, 205, 228.

[96] Robert Koch, "The suppression of tuberculosis" (Paper read at the British Congress on Tuberculosis, July 23, 1901) reprinted in *Scientific American Supplement*, Aug 17, 1901, *52*: 21434.

[97] I am grateful to Drs. Paul Diamond and Marvin Kuschner for calling my attention to current uncertainty about the communicability of tuberculosis.

ACUPUNCTURE AND WESTERN MEDICINE*

JACQUES M. QUEN

In 1784, a French royal commission investigating Mesmerism demonstrated that the therapeutic effects were due to the patient's "imagination" and not to animal magnetism.[1] In 1800, John Haygarth, a British physician, studied Elisha Perkins's patent metallic tractor treatment. Using fake tractors made of bone, wax, and wood, designed to resemble the genuine ones and to deceive the subjects, Haygarth obtained striking therapeutic responses from disabled patients previously treated unsuccessfully by various conventional means. He proved that the beneficial effects were not due, as Perkins thought, to the removal of an accumulated pathogenic "electroid fluid," but, rather, to the "imagination" of the patient.[2]

Both treatment modalities were discredited and abandoned, along with their fallacious theories, by the majority of the medical profession. In a comparative study of these two treatment methods, Carlson and Simpson concluded, "The powers of the imagination had been dramatically demonstrated, but for legitimate medicine there seemed [to be] no way to put this curious weapon to use."[3]

There were major similarities, as well as differences, between the histories of these methods and that of nineteenth-century Western acupuncture. Part of a broader study of the histories of Mesmerism, Perkinism, and acupuncture as an avenue to understanding the rejection of non-specific, effective therapies by the medical and scientific communities,[4] this paper will deal with the history of nineteenth-century acupuncture.

The first reference to Oriental acupuncture in Western medical literature was in William Ten Rhijne's dissertation on arthritis and acupuncture in 683.[5] Another description followed in Engelbert Kaempfer's doctoral dissertation[6] and in the English translation of his *A History of Japan,* in 1727.[7] In the late eighteenth century, Dujardin[8] and Vicq d'Azyr[9] refer to these descriptions of acupuncture, but do not encourage further inquiry.[10] In 1802, Mr. W. Coley, a British surgeon, published a report of abdominal distension in an infant, treated successfully by paracentesis. In an appendix to his report, he included Kaempfer's description of acupuncture and suggested that it might be useful in similar cases.[11] Kaempfer stated that the Orientals used acupuncture to release morbific vapors. This confirmed Ten Rhijne's description.[12] Their view of the theory of acupuncture does not agree with our current understanding of the rationale of the ancient Chinese medical system.

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* This article is based on a paper presented 2 May 1974 at the 47th annual meeting of the American Association for the History of Medicine, Charleston, S C The study was supported by NIMH Grant #3-R03-MH23967-01S1

[1] *Rapport des Commissaires Chargés par le Roi de l'Examen du Magnétisme Animal* (Nice: Gabrie Floteron, 1785); and, *Animal Magnetism: Report of Dr Franklin and Other Commissioners* (Philadelphia. H. Perkins, 1837)

[2] John Haygarth, *Of the Imagination as a Cause and as a Cure of Disorders of the Body,* etc (Bath R. Cruttwell, 1800).

[3] Eric T. Carlson and Meribeth M Simpson, "Perkinism vs Mesmerism," *J Hist Behav Sci*, 1970, 6: 16-24, p. 23.

[4] Jacques M Quen, "Three case studies in nineteenth-century scientific rejection: Mesmerism, Perkinism, and acupuncture," *J Hist. Behav Sci.*, in press

In an article on acupuncture, Ilza Veith has said,

> The earliest Chinese were awed by the immutable course of nature which they called *Tao,* the Way . . . . The dual force through which *Tao* acts was named *Yin* and *Yang,* with *Yin,* the female element, possessing all the negative properties, and *Yang,* the male element, all the positive qualities. But since *Tao* was . . . a unitary principle, neither of its two components ever existed in an absolute state [i.e., without the other] . . . Both *Yin* and *Yang* were held to be conveyed through the body by means of welve hypothetical main channels, or *Ching Lo,* which correspond to the twelve months of the year. . . . in man, health resulted from a balance of *Yin* and *Yang,* and all diseases were thought to be due to an imbalance of these forces.[13]

These twelve channels are called organ meridians, as distinct from two others, one mid-dorsal, the other mid-ventral, called vessel meridians.

In this medical system there are five visceral organs that are storing, passive, solid, and creative, these are *Yin* organs, while the five hollow and excreting ones are *Yang*. The viscera are grouped further in accordance with the Chinese five elements, the five seasons, and the five colors, tastes, and emotional traits.

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[5] Willem Ten Rhijne, *Dissertatio de arthritide: mantissa schematica de acupunctura et orationes tres de hymiae et botani e antiquitate et dignitate, de physionomia et de monstris* (London: R. Chiswell, 1683) See also Robert W Carrubba and John Z Bowers, "The Western world's first detailed treatise on acupuncture: Willem Ten Rhijne's *De acupunctura,*" *J. Hist. Med* , 1974, *29:* 371-398, for a brief, informative discussion and a translation of this work.

[6] John Z Bowers and Robert W Carrubba, "The doctoral thesis of Engelbert Kaempfer: *On Tropical Diseases, Oriental Medicine, and Exotic Natural Phenomena,*" *J. Hist Med.,* 1970, *25:* 270-310.

[7] Engelbert Kaempfer, *The History of Japan,* etc., 2 vols., trans J. G Scheuchzer (London J. G Scheuchzer, 1727), See vol. 2, appendix, pp. 29-34

[8] F Dujardin, *Histoire de la chirurgie* (Paris l'Imprimerie Royale, 1774), vol 1, pp. 75-105.

[9] Félix Vicq d' Azyr, *Encyclopédie méthodique, Médicine* (Paris· Panckoucke, 1787), vol 1, pp. 184-188.

[10] George Rosen reports a reference to Oriental acupuncture in 1724, by the German surgeon Lorenz Heister, similar in tone to the descriptions by Dujardin and Vicq d Azyr. "Lorenz Hiester on acupuncture· an eighteenth-century view," *J. Hist. Med* , in press

[11] W Coley, "On acupuncturation," *Med. & Phys. J.,* 1802, *7*· 235-238.

[12] See Carrubba and Bowers (n 5 above), *passim*

[13] Ilza Veith, "Acupuncture therapy — past and present," *J.A M A* , 1962, *180* 478-479

Meridians are centrifugal and centripetal. Where and how one should puncture was determined not merely by the diagnosis, but by the time of day, the time of year, the current climactic conditions, and the pulse characteristics. Consequently, the acupuncture site might be removed from the symptom location, while in nineteenth-century European practice, the needles were inserted directly into the site of pain or adjacent to it. One might thus call Western acupuncture "direct" and the Chinese acupuncture "indirect." Curiously, this has not been referred to in current discussions of acupuncture, though it has great bearing on the question of specificity of acupuncture sites in the classic system and for the design of controlled experiments for the modern study of acupuncture.

Similarities between ancient Chinese medicine and early Western medicine come to mind immediately. Asclepiades and his doctrine of *strictum et laxum*; Friedrich Hoffman's tonic and atonic states; and the Brunonian sthenic and asthenic conditions, as medical systems stressing a healthy balance between polar elements, are not so different as to make traditional Oriental concepts intellectually alien to the West. By the same token, the five elements of the Chinese system bear a marked resemblance to the four elements and the four humors of the Hippocratic school. And, of course, early psychoanalysis with its two psychic energies, *Eros* and *Thanatos*, also come to mind.

Credit for the first clinical use of acupuncture in Europe goes to the French physician L. V. J. Berlioz, who, in 1810, treated a 24-year-old woman suffering with "nervous fever" and gastralgia.[14] He reported his experience to the Paris Medical Society in 1811. A Society investigative commission condemned the method as reckless. Nevertheless, in 1816, Berlioz published his account of this case and several others.[15] He used acupuncture for the successful treatment of whooping cough, contusions, febrile headaches, severe muscle aches, pains, and strains. He expressed the belief that a galvanic current passed through the needles during the course of treatment would enhance their action, though he appears not to have tried the experiment himself. He also suggested that asphyxiated individuals for whom convenional treatments had failed, might be revived by puncturing the right ventricle and passing a current through the needle.[16] While treating the patient who had whooping cough, he pierced the stomach wall without undue consequence. He took the position that the viscera could be acupunctured quite safely.

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[14] I have been unable to locate any earlier clinical report on the use of acupuncture in Europe. See also, John Elliotson, "Acupuncture," in *The Cyclopaedia of Practical Medicine*, ed. John Forbes, Alexander Tweedie, and John Conolly, rev. with additions, by Robley Dunglison (Philadelphia: Lea & Blanchard, 1850), vol 1, pp. 54-57, p. 55

[15] L V J. Berlioz, *Mémoire sur les maladies chroniques, les évacuations sanguines, et l'acupuncture* (Paris: chez Croullebois, 1816), pp 296-311.

In 1821, in the *Dictionnaire de Médecine*, Béclard concluded his essay on acupuncture with, "Before having had experience with this procedure, . . . I was disposed to believe that it would best be left to its inventors: experience has confirmed me in this opinion."[17] Five years later, one finds reports of successful treatment of various facial neuralgias (including *tic doloreux*), sciatica, acute and chronic rheumatism, trismus, pleurodynia, gastrodynia, asthma, gout, ophthalmia, pleurisy, enteritis, orchitis, and intractable hiccups. Salandière used electropuncture for the treatment of lead colic, during which the patient felt "such a delicious sensation" that he asked for repeated electrifications, and had no recurrence of his pain. Magendie attempted to treat amaurosis with galvanopuncture but had little success. He had more encouraging results using it for extra-ocular muscle paralysis.[18]

Meanwhile, in England, between 1821 and 1828, James Morss Churchill published two books and one article describing his clinical experience with acupuncture.[19] Why acupuncture was tried so much later in England than in France is not apparent to me at this time. In 1827, John Elliotson reported a three-year study of a series of 42 consecutive cases of rheumatism treated with acupuncture at St. Thomas' Hospital. Thirty patients were cured or remarkably improved, while the other twelve, with acutely inflamed, hot joints, showed no improvement. Elliotson concluded that for the acutely inflamed, hot, rheumatic joints, acupuncture was not indicated.[20] The English also experimented with the use of galvano-puncture for the treatment or paralysed muscles and found it quite successful in restoring function.[21]

Acupuncture began to be used surgically for the closed reduction of strangulated intestinal hernias, the treatment of arterial aneurysms, edema, hydroceles, ganglia, varicosities, corneal opacities, and, in conjunction with galvanic current, the *in situ* lysis of tumors.[22] The needle began to be looked at anew, and surgeons started experimenting with it as a surgical instrument. James Young Simpson, in the mid-nineteenth century, introduced, or re-introduced, the use of acupressure, using the shaft of the needle to apply localized occluding pressure on a vessel.[23] Arterial aneurysms treated by acupuncture would develop occlusive thromboses that would canalize. Sir William Macewen, dissatisfied with the incidence of emboli occurring with this method, studied the process and in 1890, reported that the use of an acupuncture needle to scratch and damage the endothelium of an aneurysm would result in a mural thrombus less likely to embolize.[24] This kind of interest in the use of the needle, and the early Western acupuncturists' work on electrical stimulation of discrete muscle groups, led to the development of modern techniques for electromyography and electroneurophysiologic research with implanted micro-electrodes.

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[16] *Ibid.*, p 309.

[17] Phillippe Béclard, "Acupuncture," in *Dictionnaire de médecine* (Paris chez Béchet jeune, 1821), vol. 1 A-ALI), pp. 335-336.

[18] Guersent [Louis Benoît Guersant], "Piqûre (thérapeutique)," in *Dictionnaire de médecine* (Paris: chez Béchet jeune, 1826), vol. 16 (ORT-PIV), pp. 552-563.

[19] James M Churchill, *A Treatise on Acupuncturation*, etc (London: Simplin & Marshall, 1821); "On acupuncturation," *Lond. Med Repository*, 1823, *19* 372-374; *Cases Illustrative of the Immediate Effects of Acupuncturation*, etc. (London· Callow & Wilson, 1828)

[20] John Elliotson, "Acupuncture in rheumatism," *Med.-Chirurg. Trans.*, 1827, *13*.467-468.

[21] John E Morgan, "On the application of electricity directly to the nerves and muscles by means of acupuncture," *Lancet*, 1879, *2*.454-456, 499-502.

Ilza Veith[25] and George Rosen[26] have suggested, independently, that a distinction should be drawn between true acupuncture (in the Oriental tradition) and the mere instrumental or surgical piercing use of a needle ("needling"). The difficulty inherent in this task is compounded by several facts. Western use of acupuncture was based on a validated misconception of Oriental acupuncture theory (i.e., Ten Rhijne confirmed by Kaempfer). The physician who published the first description of its clinical use in the West believed the technique used to be the Oriental method. Berlioz also included, in this first report, a suggested technical innovation of combining Oriental acupuncture with galvanic current to enhance its effectiveness. Faced with this complicated genesis of Western acupuncture, I cannot implement their suggestion at this time, though some such distinction necessarily will have to be made soon.

Nineteenth-century Western physicians were struggling with an equally difficult problem, that of understanding the action of acupuncture in a Western science context. No proffered explanation seemed acceptable. The puzzle was well summarized by John Elliotson. "The modus operandi of acupuncture is unknown. It is neither fear nor confidence; since those who care

[22] L H Cohen, "Galvano-puncture; with a successful case of operation by electrolysis in a glandular tumor," *N Y. Med J* , 1875, *22*.380-387

[23] Fielding H. Garrison, *An Introduction to the History of Medicine*, etc , 4th ed. (Philadelphia W B. Saunders, 1929; reprint ed 1960), p 606 Although Garrison says Simpson "introduced acupressure (1850-1864)," he also credits Henri de Mondeville with recommending its use for hemostasis (p 156) See also, Samuel Clark Harvey, *The History of Hemostasis* (New York. Paul B Hoeber, 1929), pp. 36, 92

[24] William Macewen, "An address on aneurysm. its cure by inducing the formation of white thrombi within the sac," *Brit Med. J.*, 1890, *2* 1107-1109

[25] Ilza Veith, Personal communication, 25 June 1974

[26] George Rosen, Personal communication, 20 August 1974.

nothing about being acupunctured, and those who laugh at their medical attendant for proposing such a remedy, derive the same benefit, if their case is uitable, as those who are alarmed and those who submit to it with faith. Neither is it counter-irritation; since the same benefit is experienced when not the least pain is occasioned, as when pain is felt. Galvanism, likewise, fails to explain it; because, although the needle frequently becomes oxidated and affords galvanic phenomena while in the body, these phenomena bear no proportion to the benefit, equally take place when acupuncture is practiced upon a healthy person, and do not take place when needles of gold or silver are employed, which, however, are equally afficacious with a needle of steel."[27]

In 1825, Morand published his clinical experiences with acupuncture in France. Translated that same year by Franklin Bache of Philadelphia, it was the first treatise on acupuncture published in America.[28] Bache experimented with acupuncture on penitentiary prisoners — the earliest use of convicts as subjects for medical experiments in America that I have come across. There was sporadic interest in acupuncture elsewhere in the United States, but it did not receive notable attention until the latter half of the nineteenth century. In a recent article on the subject, the author says,

> . . . acupuncture failed to take hold in the highly volatile and uncertain world of Jacksonian America. This was undoubtedly due in part to a lingering suspicion that the measure was quackery, but doubtless even more to the perception of its inherent drawbacks and also to such added complications as infections rising out of this pre-Listerian operation. Another reason for the decline in interest may well have been the emergence during the 1840s of ether and the various other anesthetics as effective means for the relief of pain in surgery.[29]

Whilst the suspicion of quackery was associated with acupuncture in America, infections were not a prominent feature of any of the reports, except for Elliotson's *caveat* to avoid acupuncture below the knee in cases of anasarca or to risk "mortification."[30] Regarding the advent of ether, it would not have been assocated with acupuncture since acupuncture was a surgical technique and not used "as a means for the relief of pain in surgery." According to Samuel Rosen, acupuncture surgical anesthesia has been used in China only since 1966.[31].

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[27] Elliotson, "Acupuncture" (n. 15 above).

[28] S Morand, *Memoir on Acupuncturation*, etc., Paris, 1825, trans. from the French by Franklin Bache (Philadelphia: Robert Desilver, 1825).

[29] James H. Cassedy, "Early uses of acupuncture in the United States, with an addendum (1826) by Franklin Bache, M D.," *Bull N. Y. Acad Med.*, 1974, *50*:892-906, p. 896.

[30] Elliotson, "Acupuncture in rheumatism" (n. 20 above), p. 468; also "Acupuncture" (n. 14 above), p. 56.

[31] *Medical Tribune and Medical News*, Vol. 13, No. 13, Wednesday, March 29, 1972, p. 1, cols. 1-3; p. 14, col 4. "Acupuncture anesthesia used only since '66."

In 1853, the American edition of Druitt's *Principles and Practice of Modern Surgery* reported,

> Acupuncture . . . is certainly very efficacious in some cases of neuralgia, but it is by no means easy to explain its operation. Acupuncture is also resorted to in anasarca, when the skin is much distended; — and we have spoken of its utility in ganglion, hydrothorax, and ascites, for the purpose of permitting the serum to exude into the cellular tissue.[32]

In 1886, the tenth edition of Biddle's *Materia Medica and Therapeutics* said that acupuncture is "a useful remedy in rheumatism, neuralgia, local paralysis, etc."[33] In 1892, William Osler said in the first edition of his *Principles and Practice of Medicine,*

> For lumbago, acupuncture is, in acute cases, the most efficient treatment. Needles of from three to four inches in length (ordinary bonnet-needles, sterilized, will do) are thrust into the lumbar muscles at the seat of the pain, and withdrawn after five or ten minutes. In many instances the relief is immediate, and I can corroborate fully the statements of [Sydney] Ringer [the British physiologist], who taught me this practice, as to its extraordinary and prompt efficacy in many instances.

Osler also recommended acupuncture for the treatment of sciatica.[34] He contined to recommend the use of acupuncture for these conditions through the tenth edition of his book. By the 1950s, acupuncture appeared to have lost any interest it may have held for the Western medical world.

In the autumn of 1971, four American physicians toured the People's Republic of China.[35] It would not be excessive to say that their descriptions of acupuncture surgical anesthesia astonished the Western medical world. Samuel Rosen, a leading American ear surgeon reported, "When you see these operations, you come out and you pinch yourself. You wonder if you really saw what you saw. After you have seen it over and over, you have to give up what you thought in favor of what you saw."[36]

The revival of interest in acupuncture was accompanied by a repetition of early rejection by a significant portion of the medical community, for reasons that are unclear. Commenting on the first reports of Drs. E. Grey Dimond,

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[32] Robert Druitt, *The Principles and Practice of Modern Surgery*, ed F W. Sargent (Philadelphia: Blanchard & Lea, 1853), p. 527.

[33] John B. Biddle, *Materia Medica and Therapeutics*, etc , by Clement Biddle and Henry Morris, 10th ed. (Philadelphia. P. Blakiston, 1886), pp. 19-20.

[34] William Osler, *The Principles and Practice of Medicine*, (New York: D. Appleton, 1892), p 101

[35] E. Grey Dimond, "Medical education and care in People's Republic of China," *J A M.A.*, 1971, *218:*1552-1557; also, "Acupuncture anesthesia: Western medicine and Chinese traditional medicine," *J.A.M.A.*, 1971, *218.*1558-1563.

[36] Quoted in "Rosen describes anesthesia by acupuncture," *Medical Tribune and Medical News*, March 22, 1972, *13.*1, 18.

Samuel Rosen, Victor Seidel, and Paul Dudley White, an ex-Congressman, ex-medical missionary to China said, "Our people on the specially guided tours that Peking has set up for them, have been brain-washed and don't know it; the tour guides are pure propagandists."[37] Several physicians decided that acupuncture was merely a variant form of hypnosis.[38] Still another, who appeared to have no substantial experience with acupuncture technique, theory, or history asserted, "Neither the diagnostic nor therapeutic technique has any basis."[39] Lewis Thomas, president of the Memorial Sloan-Kettering Cancer Center said, "These are bad times for reason, all around. Suddenly all of the major ills are being coped with by acupuncture."[40] Perhaps the response that demonstrated the most impartial curiosity and the least pre-judgement, consonant with the traditional scientific ideal, was that of Paul Dudley White, who said, "If it were the world's best technique, we'd all be using it. If it were useless it would have been dropped thousands of years ago. There's something in it, but it's difficult to say just what."[41]

The history of acupuncture, in the twentieth as well as the nineteenth century, suggests a compulsive repetition of premature verdicts by members of the Western medical and scientific communities. The premature acceptors, and the premature rejectors, are equally anti-scientific method proponents. Their reactions tend to minimize opportunity for impartial observation and experimentation. What can be said, with substantial basis, regarding the motivations for both groups? It would seem that historical study could provide that substantial basis by making available the desired perspective that is so difficult to attain in the study of contemporary phenomena.

As the mode of action of effective acupuncture puzzled and eluded the nineteenth-century Western physician, so the contemporary historian finds the reasons for the nineteenth-century early rejection of it puzzling and elusive. In still another study of nineteenth-century Western acupuncture, another historian's attempted explanation is found wanting. The author said that European physicians were "reluctant to accept the theory of the yang and yin forces in the body . . . . The lack of a satisfying rationale behind the use of acupuncture, its employment by nineteenth-century charlatans, along with the eclipse of China as a major world power, tended to restrict the use of the operation to a minor role in western medical therapy."[42] There is no evidence that knowledge of the *Yin* and *Yang* energies in the Chinese medical system existed in Europe in the early nineteenth century. The rejecting character of the reaction of the Western medical community was established by 1830, and charlatanism was not associated with acupuncture until the 1840s (at least in the form of the implicated Baunscheidtism). As for international political factors, there is no evidence in the medical literature that China's position as a world power, or non-power, played any role.

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[37] Quoted in " 'Baloney!' says Judd to reports from China," *Modern Medicine*, February 21, 1972, *40:* 79

[38] W. S Kroger, "Hypnotism and acupuncture," *J.A.M.A.*, *1972*, *220:*1012-1013; J. Wyckert, "Scientist suggests acupuncture-hypnosis link," *Psychiatric News*, June 21, 1972, *7:* pp. 1, 28.

[39] Arthur Taub, "Acupuncture," *Science*, 1972, *178* 9

[40] Barbara J. Culliton, "Sloan-Kettering: the trials of an apricot pit — 1973," *Science*, December 7, 1973, *182*: 1000-1003.

[41] Quoted in "Acupuncture: myth or miracle?" *Newsweek*, August 14, 1972, 48-52, p 52.

Mesmerism, Perkinism, and acupuncture were all acknowledged to produce functional improvement in cases refractory to conventional medical treatment. The theories of the first two were proved to be fallacious, while the effect of acupuncture, without any apparent theoretical basis, was also attributed to the "imagination." Once the theories were disproved, or the "imagination" implicated, the medical and scientific communities seemed to ignore their objective therapeutic effectiveness. There was no significant interest in clarifying their mode of action, or the mode of action of the "imagination." One provocative exception to this is the ubiquitous Pennsylvania physician, Benjamin Rush, who said in a lecture in 1789,

> I reject the futile pretensions of Mr. Mesmer to the cure of diseases, by what he has absurdly called animal magnetism. But I am willing to derive the same advantages from his deceptions, which the chemists have derived from the delusions of the alchemists. The facts which he has established, clearly prove the influence of the imagination, and the will, upon diseases. Let us avail ourselves of the handle which those faculties of the mind present to us in the strife between life and death.[43]

The similarities of the medical community reactions to the three methods under consideration is underscored by the statement, in 1830, of John Renton, a Scot physician acupuncturist, commenting on the reaction to acupuncture.

> The utility of a specific is very readily suspected, when its infallibility is given out for the removal of too many diseases, and more particularly of those between which no analogy can be traced. And when, moreover, no satisfactory explanation can be afforded of the *modus operandi* of the reagent, professional persons, unhappily for the interests of medical science, are too apt to reason upon the authenticity of the facts averred, instead of adopting the more simple and direct method of determining their value by subjecting them to the fact of further experience.[44]

What factors, other than objective performance criteria, entered into the evaluation of these treatment methods? What is at issue is not the mechanism or "scientific validity" of the treatment method in question, but, rather, what determined the selective inattention to the documented clinical responses and their significance. Patients whose disabilities did not respond to conventional medical modes responded to these. Effective treatment methods were rejected with the rationalization that the specific theories were wrong and that the effects were due to the "imagination." It is difficult for the historian to reconcile this with the major importance attributed to mental factors in the onset and treatment of disease in the late eighteenth and early nineteenth centuries. The same problem applies, in mirror-image, when we consider the persistent popularity of bleeding, to the extent that, in 1828, even after he had demonstrated its ineffectiveness statistically, Pierre Louis suggested that when all else failed, one should try it anyway.[45] Bleeding was recommended in an American medical textbook as late as 1889.[46]

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[42] John S. Haller, Jr., "Acupuncture in nineteenth century Western medicine," *New York State J. Med.*, 1973, *73:* 1213-1221.

[43] Benjamin Rush, "Observations on the duties of a physician," in *Medical Inquiries and Observations* [Collected Works] 2nd ed , 4 vols. (Philadelphia: J Conrad, 1805), vol. 1, pp. 394-395

[44] John Renton, "Observations on acupuncture," *Edin. Med. & Surg. J.*, 1830, *34:* 100-107, p. 101

The answer to the question "What factors, other than objective performance criteria, enter into the evaluation of a therapy?" lies in the psychological and sociological areas. The clarification of these factors, and their interrelationships, requires thorough and detailed study of such incidents in the history of medicine.

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[45] Pierre C. A. Louis, "Research on the effect of blood-letting in several inflammatory maladies" (trans. W J Gaines and H G. Langford), *Arch. Int. Med.*, 1960, *106:* 571-579 This paper originally appeared in 1828 (*Arch. gén. méd.*, 1828, *18*: 321-336) not in 1835 as stated by the translators.

[46] John B. Biddle, *Materia Medica and Therapeutics*, etc., by Clement Biddle and Henry Morris, 11th ed. (Philadelphia: P Blakiston, 1889), pp. 33-35.

THE KING'S COLLEGE MEDICAL SCHOOL AND THE PROFESSIONALIZATION OF MEDICINE IN PRE-REVOLUTIONARY NEW YORK

DAVID C. HUMPHREY

One day in October 1775 the "famous Dr. Dubuke" breezed into New York City from Boston and announced that he was prepared to cure anything from green wounds and black jaundice to the bloody flux, harelips, and venereal disease. Five months later Dr. Dubuke boarded the stage for New Jersey, sporting a brand he had received for stealing indigo.[1] Despite his ignominious punishment, Dr. Dubuke symbolized the sorry state of medicine in eighteenth-century New York. A charlatan of the most obvious kind, he had lasted in New York for five months and been convicted not of fraud, malpractice, or of failing to procure a medical license, but of stealing.

The founding of the King's College Medical School in 1767 reflected an attempt by a group of New York City doctors to professionalize the practice of medicine in New York, so that the Dr. Dubukes of the world would no longer find New York City a haven for their quackery. At mid-century the city had no system for licensing physicians and surgeons, no provision for medical education outside of apprenticeship, no professional society of doctors, and no hospital. Typically, of the thirteen city doctors who jointly announced in 1745 the end of a recent yellow fever epidemic, only one had studied at a medical school.[2] Even the city's most respected doctors failed to display much professional esprit. One critic complained in 1745 that they refused to communicate their observations to one another because each feared a "design to supplant" him in his "trade."[3]

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[1] *Constitutional Gazette*, Oct. 18, 1775, March 9, 1776. I have found the works of Richard H. Shryock, Lester S King, and Whitfield J Bell, Jr. continuingly helpful in writing this essay, especially Shryock's *The Development of Modern Medicine* (New York: Knopf, 1947) and *Medicine and Society in America, 1660-1860* (New York: New York Univ. Press, 1960), King's *The Medical World of the Eighteenth Century* (Chicago. Univ of Chicago Press, 1958), and Bell's "Medical practice in Colonial America," *Bull Hist. Med*, Sept.-Oct. 1957, *31:* 442-53, and "A portrait of the Colonial physician," *Bull Hist. Med*, Nov.-Dec. 1970, *44:* 497-517. I have also used extensively Francisco Guerra's *American Medical Bibliography, 1639-1783* (New York: Lathrop C Harper, 1962).

[2] The thirteen names are listed by Claude E Heaton, "Medicine in New York during the English Colonial period," *Bull. Hist Med.*, Jan. 1945, *17:* 25-26; John Duffy, *Epidemics in Colonial America* (Baton Rouge. Louisiana State Univ. Press, 1953), 156

[3] Cadwallader Colden to John Mitchell, Nov 7 [1745], *Collections of the New York Historical Society* (referred to hereafter as *NYHS Collections*), 1934, *67:* 329.

By 1775, however, only Philadelphia rivaled New York City as a colo-ial medical center. New York boasted one of the two medical schools in ngland's new world colonies, the first colonial law which licensed physi-ians and surgeons, a vigorous and competent medical community, an infor-al medical society, and a hospital nearing completion. New York had eached only the periphery of modern medical practice, however, as sug-ested by the ease with which a man like Dubuke managed to survive.

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The campaign to upgrade medicine in New York grew out of the city's uccess in attracting talented and well trained physicians during the two ecades after 1745. Their skill, their vision, their thirst for social prestige, and heir belief in the superiority of European modes of medical education and ractice made it impossible for them to tolerate the medical "free-for-all" hey witnessed about them.[4] John Bard, Peter Middleton, and John Jones rovided the nucleus of a reputable medical profession. When John Bard nigrated to New York from Philadelphia in 1745, Benjamin Franklin recom-nended him as "an ingenious Physician and Surgeon, and a discreet, worthy nd honest Man."[5] Peter Middleton, a young Scot with an M.D. from the Jniversity of St. Andrews, settled in New York shortly after 1750, as did John ones, a Long Islander who had studied with the leading anatomists and urgeons in London and Paris.[6] The three men soon developed a warm ersonal and professional camaraderie that lasted until Middleton's death in 781.[7]

The quality and professional character of their medical practice quickly set Bard, Middleton, and Jones apart from most of the forty or so doctors in New York City in the 1750s.[8] Both Bard and Jones won public esteem for their surgical achievements, particularly for their success at "extracting the Stone from the human Bladder."[9] Moreover, Bard's report of his 1759 operation on a woman for an extra-uterine pregnancy earned a reading before a society of London physicians and publication in London's *Medical Observations and Inquiries.*[10] By 1761 two of Peter Middleton's cases had been communicated to a society of physicians in Edinburgh. Professor Robert Whytt of the University of Edinburgh described one of Middleton's reports as "the Clearest proof of the Sensibility of the *Pleura* in a man, that I have any where met with. . . ."[11]

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[4] Richard Shryock aptly characterizes colonial medicine as a "free-for-all" in *Medicine and Society,* 31.

[5] Franklin to Cadwallader Colden, Nov. 28, 1745, Leonard W. Labaree *et al.*, eds , *The Papers of Benjamin Franklin* (New Haven: Yale Univ. Press, 1959), III, 49.

[6] *Dictionary of American Biography, s.v.* Peter Middleton; Richard Bayley, *Cases of Angina Trachealis . . To which is added, a Letter from Peter Middleton, M. D To the Author* (New York, 1781), 19; James Mease, ed., *The Surgical Works of the Late John Jones, M. D.* (Philadelphia, 1795), 7-8.

[7] Samuel Bard, Biographical account of his father, n d., Bard Collection, Bard College Library (collection and library referred to hereafter as BCL).

[8] Contemporary estimates ranged from "upwards of Thirty" to "*upwards of* 40." See *N. Y. Gazette Revived in the Weekly Post-Boy,* April 27, 1752; *N. Y. Gazette: or, the Weekly Post-Boy,* Feb. 5, 1753; Milton M. Klein, ed., *The Independent Reflector . .* (Cambridge, Mass.. Belknap Press of Harvard Univ., 1963), 139 (Feb. 15, 1753).

[9] *N. Y. Mercury,* May 17, 1756, Mease, ed., *Surgical Works of John Jones,* 10.

The European influence on medical practice in New York gained additional impetus when Samuel Clossy and John Bard's son, Samuel, established practices there in the 1760s. Born in Ireland and the recipient of B.A. and M.D. degrees from Trinity College in Dublin, Clossy was a Fellow of Ireland's College of Physicians and had published a pioneering study on morbid anatomy in 1763. He migrated to New York City the same year and promptly displayed his skills to all comers by delivering a series of lectures on anatomy, which he illustrated by dissecting two cadavers.[12] Samuel Bard began practicing in New York City in 1766, upon completing four years of medical studies in London and Edinburgh. As a student at Edinburgh, where he received an M. D. in 1765, Bard had repeatedly demonstrated the talent, the enthusiasm for medical science, and the capacity for work which would make him a dominant figure in New York medicine from 1766 until his death in 1821.[13]

John and Samuel Bard, Peter Middleton, John Jones, and Samuel Clossy — let us call them the "professionals" for convenience' sake — soon formed an alliance that reflected their fundamental agreement about the nature of medical practice. Influenced by European professional ideals, each regarded himself as a scientific and an ethical practitioner.[14] Together they believed that hese attributes distinguished them from most of the doctors in eighteenth-entury New York. By 1766 there were, indeed, perhaps seven or eight other ity doctors whom they recognized as colleagues, men like William Farquhar, John Charlton, James Smith, and John Van Brugh Tennent.[15] Yet, if all these men shared similar attitudes toward medicine, the "professionals" took the ead in implementing and disseminating them. In fact, the King's College Medical School would turn out to be largely the creation of Middleton, Jones, Clossy, and Samuel Bard.

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[10] *Medical Observations and Inquiries*, II (1757-61), 369-72, quoted in Byron Stookey, *A History of Colonial Medical Education: in the Province of New York, with its Subsequent Development (1767-1830)* (Springfield, Ill.: Thomas, 1962), 33.

[11] Robert Whytt to Cadwallader Colden, March 17, 1761, *NYHS Collections*, 1922, *55:* 16.

[12] Morris Saffron, *Samuel Clossy, M. D. (1724-1786), Professor of Anatomy at King's College, New York. The Existing Works* (New York: Hafner, 1967), xi-xxi; Clossy to George Cleghorn, received Aug. 1, 1764, *ibid.*, xxx-xxxi

[13] Samuel Bard to John Bard, Nov. 14, 1762, Feb. 16, 1764, BCL, Samuel Bard to John Bard, Dec. 29, 1762, Bard Collection, New York Academy of Medicine (collection and library hereafter referred to as NYAM)

[14] I have used the following sources in piecing together the scientific and ethical conceptions of the five men. Samuel Clossy. Saffron's collection of Clossy's writings (see n. 12), especially Clossy's lecture, "The Uses of Anatomy," and the "Preface" to his *Observations On some of the Diseases Of the Parts of the Human Body*, Peter Middleton: Middleton's *A Medical Discourse, or an Historical Inquiry Into the Ancient and Present State of Medicine* (New York, 1769); Samuel Bard: Bard's *A Discourse upon the Duties of a Physician* (New York, 1769), and Bard's letters to his father in the NYAM and BCL; John Bard: Bard's letters to his son in NYAM and BCL, Bard's "An Essay on the Nature and Cause of the Malignant Pleurisy . . . ," *American Medical and Philosophical Register. . .* , 2nd ed., (New York, 1814), I, 409-21, and Samuel Bard's Biographical account of his father, n. d., BCL; John Jones. W. B. McDaniel II, ed., "John Jones' Introductory Lecture to

The "professionals' " scientific and ethical conceptions of medicine led them to condemn the majority of New York City's doctors as "empirics." The term "empiric" embraced on one hand charlatans like Dr. Dubuke, deliberately dishonest doctors who masked their medical ignorance with bombastic publicity about their curative skills. But other empirics, probably a majority, lacked the charlatan's penchant for blatant deception. The "professionals" considered these empirics damaging to the prestige of the profession and the lives of New York's citizenry primarily because their practice was, iterally, empirical.[16]

To men who equated responsible medicine with rational science, the empirics' method seemed sloppy, superficial, and dangerous. Relying largely on his past experience, the empiric discounted the value of exploring the causes of disease or the reasons why a particular cure succeeded or failed. When he treated a patient, the empiric asked instead whether he had encountered a similar case before. If so, he prescribed what had worked previously. If he did not know a successful cure or he was unfamiliar with the case, the empiric resorted to trial and error — or so the "professionals" believed; for "being unacquainted with the Nature of the Distemper, or any certain Method of Cure, they *range* thro' the whole Materia Medica, in Hopes they may fortunately *hit* upon a Remedy at last."[17] Dr. Roelof Kierstede exemplified a successful empiric in mid-century New York City. His obituary in 1745 noted hat he had been "eminent in his Profession, altho' not skill'd in the technical Terms thereof, which often drew on him the Contempt of his Brethren; yet his

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His Course in Surgery (1769), King's College, Printed from the Author's Manuscript," *Transactions & Studies of the College of Physicians of Philadelphia*, 4th ser., 1940-41, *8*· 180-90, and Jones' *Plain Concise Practical Remarks on the Treatment of Wounds and Fractures* (New York, 1775), especially the preface To avoid constant repetition, for the discussion which follows in the next eight paragraphs I have restricted footnotes which cite material in the above sources largely to quotations.

[15] John Bard to Samuel Bard, Jan 17, 1764, BCL; John Bard to Samuel Bard, Dec. 11, 1765, NYAM.

[16] King, *Medical World of the Eighteenth Century*, ch. 2, and King, "Rationalism in early eighteenth century medicine," *J Hist. Med & Allied Sci.*, July, 1963, *18*· 257-271, have provided helpful background material for he discussion in this and the following two paragraphs.

[17] Middleton, *Medical Discourse*, 53.

great Knowledge of Simples [medicines], his extensive Charity and successful Cures to poor People, has made . . . his death a real public loss.''[18] Outside New York City empiricism was even more widespread. A Maryland physician commented upon visiting Albany in 1744 that the town's doctors were ''all empyricks, having no knowledge or learning but what they have acquired by bare experience.''[19]

The ''professionals'' reserved their admiration for the ''rational Physician.'' In contrast to the empiric, the rational physician organized his medical knowledge into theories which explained the functioning of the body and the cause and treatment of disease. Should he encounter an unusual illness, he did not rely on trial and error; instead, claimed Peter Middleton, he ''applies the Ideas he had already formed in his Mind, about the Nature of Diseases in general, to this particular Case; by which he easily discerns the Genius of the Disease; whence it arises; the true Indications of Cure; and what Method ought chiefly to be pursued. . . .''[20] Experience, in the form of observations and experiments, remained the fundamental source of medical data for the rationalist. But, as Samuel Clossy announced in his first lecture at the King's College Medical School, he and his associates hoped ''to prove in a while'' that there was ''something more than mere Empiricism'' among them.[21] Experience provided the empiric with isolated bits of information, a kind of medical grab bag through which one rummaged when seeking the cure for a disease. Experience provided the rationalist with the building blocks of generalization and theory, which in turn explained with increasing comprehensiveness the nature of disease and the means of its treatment.[22]

In practice the distinction between the empiric and the rationalist lacked the crispness suggested by these ideal types, but the ''professionals'' considered the differences to be crucial. Moreover, the conception of the physician as a rational scientist implied other assumptions about his training, intellectual outlooks, and professional behavior. The ''professionals'' believed that the physician needed first of all to master the several dimensions of knowledge that comprised medical science. For instance, how could one understand human physiology without studying anatomy and natural philosophy? While anatomy introduced the physician to the intricate structure of the human body, natural philosophy acquainted him with the principles of pneumatics, optics, hydraulics, and mechanics, which supposedly helped explain such bodily processes as breathing, seeing, the circulation of the blood, and the operation of the bones and muscles.[23] Chemistry and botany were, in similar fashion, prerequisites to understanding the nature of drugs. When the physician matched his grasp of these subjects with studies which focused directly on the theory and practice of medicine, he gained a coherent perspective on medical science which he could not achieve through fragmentary learning.

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[18] *N. Y. Weekly Post-Boy*, July 22, 1745, quoted in John Duffy, *A History of Public Health in New York City, 1625-1866* (New York: Russell Sage Foundation, 1968), 64

[19] Carl Bridenbaugh, ed , *Gentleman's Progress The Itinerarium of Dr Alexander Hamilton, 1744* (Chapel Hill: Univ. of North Carolina Press, 1948), 65.

[20] *Medical Discourse*, 54

[21] ''Uses of Anatomy,'' Saffron, *Samuel Clossy*, cxvi.

[22] Although John Bard, unlike the other four men, did not study in Europe, he shared thoroughly the ideas discussed here. His son wrote of him, for instance, in ''his profession he read all the best authors of his day but his studies were rather select than general — Sydenham & Huxham were his favorites, [and] he formed himself in their plan . .'' John Bard not only dispatched his son to Edinburgh for a medical education — at heavy expense — but emphasized how important it was that Samuel investigate the ''original'' principles upon which medical science was founded See Samuel Bard, Biographical account of his father, n. d., and John Bard to Samuel Bard, draft, n. d., BCL

The "professionals" did not think of this process as the mastery of a fixed body of knowledge. They saw themselves as the inheritors of a rich intellectual legacy that reached back to the Greeks. But they also believed that William Harvey's discovery of the circulation of the blood had ushered in the "most memorable *AEra* in the History of Physic." Experiment and observation had uncovered so much new physiological and pathological data during the past century and a half that a mere "*Catalogue*" of it would "fill a Volume."[24] Nor had the "moderns" exhausted the possibilities for medical discovery. None "but very superficial minds can imagine, that the limits of our present knowledge are the limits of the art," John Jones told his surgery students. This conception of medical science shaped in several ways the "professionals' " image of the "judicious and rational Physician." First, he should be thoroughly familair with the standard medical authorities of his own and previous ages — men like Hippocrates, Hermann Boerhaave, John Huxham, Thomas Sydenham, Giovanni Battista Morgagni, and Percival Pott — "without whose assistance, the greatest genius, wou'd be nothing more, than an ignorant, & presumptuous practitioner." Moreover, living in an age of medical discovery, he should recognize that "Continual study" was essential. Those physicians and surgeons who neglected to "inform themselves, of the new discoveries made in different parts of the world" became "only servile imitators"; after "twenty years labour," they were "little wiser than their first masters."[25] Finally, the rational physician should himself participate in the process of discovery, evaluating his own observations in light of established medical opinion and communicating his insights to his professional colleagues.

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[23] Samuel Clossy and Peter Middleton placed the greatest emphasis on the value of these principles, though the others by no means disregarded them. See Clossy, "Uses of Anatomy," Saffron, *Samuel Clossy*, civ-cv; *N. Y. Gazette, and the Weekly Mercury*, Oct. 21, 1771; Middleton, *Medical Discourse*, 57; Samuel Bard to John Bard, Dec. 29, 1762, NYAM; Benjamin Rush to John Morgan, Jan. 20, 1768, L. H. Butterfield, ed., *Letters of Benjamin Rush* (Princeton: Princeton Univ. Press, 1951), I, 50; McDaniel, "John Jones' Introductory Lecture," 183-84

[24] Middleton, *Medical Discourse*, 17, 50

The "professionals" believed so strongly that medical competence reflected rational science that their discussions of medical ethics served in part simply to confer moral legitimacy on scientific medicine: the doctor had a moral obligation to practice medicine in the ways outlined above. Samuel Bard did caution prospective physicians that they should never "despise a Man for the want of a regular Education" and should "treat even harmless Ignorance, with Delicacy and Compassion." But Bard also declared that should doctors encounter ignorance "joined with foolhardiness and Presumption, [they] must give it no quarter."[26] For the "professionals," whose dedication to scientific medicine often bordered on arrogance, it was not difficult to identify the empiric's practice as foolhardy.

However, the five men did emphasize other ethical considerations. A doctor should visit his patients frequently, listen to them attentively, be particularly solicitous to those suffering both poverty and disease at once, and, above all, unquestioningly place the "Welfare of his *Patient*" before "every Consideration which Pride and Avarice can suggest. . . ." Toward his fellow practitioners the doctor should be open, honest, and willing to join in consultations. He should never "pretend to Secrets," nor "practice those little Arts of Cunning and Dissimulation," nor "attempt to raise . . . [his] Fame on the Ruins of another's Reputation. . . ." In all his professional relationships the doctor should ever be the gentleman: "decent in his Appearance," "discreet in his Manners," "humane," and "compassionate."[27]

Judged by this set of scientific and ethical criteria, the majority of New York City doctors in the 1760s impressed Middleton, Clossy, Jones, and the two Bards as inferior practitioners. The state of medical practice in New York seemed all the more barbaric when the "professionals" compared it to their inflated image of medicine in Europe. How "wide is the Distance," lamented Middleton in 1769, between the "unequalled Lustre" of British medicine and the "present obscure and illiterate Scenes before us" in New York. How "unequal" and "absurd" was a comparison of Europe's "towering and enlightened Geniuses of ancient and modern Days" with the "*favourite* Wonder-working *Doctors* of this Place."[28] What Middleton was really talking about was the practice of Europe's medical elite in urban and educational centers like London, Paris, Edinburgh, Leyden, and Dublin. New York City's medical profession, he hoped, would someday take its place among them.

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[25] McDaniel, "John Jones' Introductory Lecture," 184-85, Middleton, *Medical Discourse*, 54.

[26] Bard, *Discourse upon the Duties*, 9.

[27] *Ibid.*, 9-10, Middleton, *Medical Discourse*, 66-67

[28] *Ibid*, 50-51

If Middleton's picture of European medicine boldly overlooked the "empirical" practice of most European doctors, his characterization of medicine in New York underplayed the signs of progress. For one thing, between 1745 and 1766 the strength of the medical community had been bolstered by a steady accession of competent practitioners. Among them were not only the Bards, Middleton, Jones, and Clossy, but also such reputable doctors as John Charlton, Beekman Van Beuren, and three young recipients of M. D.'s from Leyden who established practices in the mid-1760s: John Van Brugh Tennent, Benjamin Prime, and James Smith. For another, by the mid-1760s most of these men were meeting regularly in a medical society. Although historians usually claim that the society dated from 1749, the evidence suggests that it more than likely had its beginnings after 1760. Here the "professionals" and their associates planned the King's College Medical School and the city's first hospital.[29]

Also, by 1766 Samuel Clossy had dramatically upgraded the quality of medical education in New York by instituting lectures in anatomy shortly after his arrival at New York in 1763.[30] Apparently the "young gentlemen of the Profession" responded so enthusiastically that Clossy sought sponsorship of his lectures by the governors of King's College.[31] The governors declined to appoint Clossy a professor of anatomy, but they did permit him to hold his lectures at the college. Under this arrangement, Clossy lectured on anatomy during the winters of 1764-65 and 1765-66 and on *materia medica* (the source, composition, preparation, and use of medicines) during the summer of 1765.[32] Finally, in 1760 the New York legislature had passed the first colonial law which established procedures for licensing physicians and surgeons. The law stipulated that no one could practice as a physician or surgeon in New York City without first passing an examination in "Physick or Surgery," administered by a committee of prominent political figures. Violators were subject to a five pound fine for each offense. However, the law exempted anyone already practicing in the city.[33]

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[29] *Ibid.*, 69; Bard, *Discourse upon the Duties*, i. The 1749 date is widely accepted. See, for example, Duffy, *Public Health in New York City*, 65; Raymond P. Stearns, *Science in the British Colonies of America* (Urbana. Univ. of Illinois Press, 1970), 671; Stookey, *Colonial Medical Education*, 12, 75. It has also been criticized: W. B. McDaniel II, "A Brief Sketch of the Rise of American Medical Societies," Felix Marti-Ibanez, ed., *History of American Medicine: A Symposium* (New York: M.D. Publications, 1959), 134. The 1749 date rests on one piece of evidence. John Bard read a medical essay to a "weekly society of gentlemen in New-York" in January 1749 (see n. 14). However, there is no evidence that this was a society of medical men, or that it was founded in 1749, or that it remained in existence during the 1750s, or that there is any continuity between this group and the medical society referred to by Samuel Bard and Middleton in 1769. Nor is it at all clear just who could have belonged to it if it was a medical group, since the ranks of the professional medical community in 1749 were so thin. On the other hand, scientific and literary groups with an interest in medical topics were not uncommon. A "Society for the Promotion of Useful Knowledge" met regularly in New York City in 1748 and 1749. Leading members included William Smith, Sr. and Jr., William Livingston, and James Alexander, all of whom were lawyers (see Klein, *The Independent Reflector* 18, 18*n*). There do not appear to be any other indications that a medical society existed in New York at mid-century. In *Old New York: or, Reminiscences of The Past Sixty Years* (New York, 1866), 288, John W. Francis mentions a "club of professional gentlemen in New York about 1750." But Francis's list of members indicates that the club was clearly not a medical group. Nor is Francis a contemporary source. He was born almost forty years after the event. The references to a medical society made by Samuel Bard and Middleton in 1769 (see above), the development of the professional medical community discussed in this essay, and the organization of medical societies in Philadelphia and New Jersey about 1766 all point to the mid-1760s as the date of origin of the medical society out of which grew the King's College Medical School and the city's first hospital. Probably this was the city first medical society.

[30] *N. Y. Gazette, or the Weekly Post-Boy*, Nov. 17, 1763

Despite these accomplishments, Middleton could marshal a variety of evidence to substantiate his harsh words about medical practice in New York. The 1760 licensing law itself was a case in point. Just who pressed for passage of the law is difficult to tell. Between 1749 and 1754 New York City's newspaper readers were treated to occasional essays which condemned the city's "*vile Quacks* and *base Pretenders*" and proposed licensing procedures.[34] Dr. Henry Van Beuren complained, for example, that "Every pitiful Fellow now a-Days . . . assumes to himself, with no small Arrogance, the Appellation of *Doctor*. . . ." William Smith, Jr., one of the city's more able lawyers, attacked the "greatest Part" of the city's doctors as "meer Pretenders to a Profession, of which they are entirely ignorant." Both Van Beuren and Smith argued that "proper Regulation" by the legislature was essential, and Smith suggested in some detail the contents of a licensing law.[35] A third author went so far as to describe a particularly gruesome obstetrical procedure which, he claimed, two city surgeons had recently used with fatal consequences for three infants and two mothers.[36] Despite indications of both a need for legal regulation and of backing for it within and outside the medical community, no law was immediately forthcoming, and the issue largely disappeared from the press for the next several years. No doubt the hiatus reflected public engrossment in the Seven Years War, which began in 1754. But the delay also hinted that proponents of the legislation were neither effectively organized nor widely supported. Finally, late in 1759 the New

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[31] John Bard to Samuel Bard, Jan. 17, 1764, BCL; John Watts to General Monckton, May 16, 1764, *NYHS Collections*, 1928, *61*: 254-55.

[32] *N. Y. Gazette or the Weekly Post-Boy*, May 9, 1765; *N. Y. Mercury*, Aug 13, 1764, Sept 30, 1765

[33] *The Colonial Laws of New York from the Year 1664 to the Revolution* (Albany, 1894), IV, 455-56.

[34] *N. Y. Gazette Revived in the Weekly Post-Boy*, Feb. 12, 1750.

[35] *N. Y. Gazette or, the Weekly Post-Boy*, May 20, 1754; Klein, *Independent Reflector*, 139 (Feb. 15, 1753), 225-27 (May 10, 1753) See also the *New-York Evening Post*, April 3, 1749.

[36] *N Y Mercury*, May 13, 1754, supplement See also *N. Y. Evening Post*, Dec. 9, 1751.

York General Assembly responded to an "Application . . . made to them" and passed a licensing act. Six months later the governor signed it into law.[37]

During the fifteen years between the passage of the law and the outbreak of the Revolution, quacks frequented New York City as regularly as ever. "Doctor Stork" claimed that he was "surgeon and occulist to her royal highness the Princess of Wales." Ibrahim Mustapha, master of "Turkish Inoculation," ballyhooed his position as "Inoculator to his Sublime Highness and the Janissaries." No one advertised that he had been licensed by the colony of New York.[38] Nor is there a record of any convictions for not procuring a license.[39] In 1770 and again in 1773 New York City was even blessed with visits by James Graham, the "Emperor of Quacks," who soon after opened his enormously successful "Temple of Health" in London. Among its attractions was the "Grand Celestial Bed"; Graham assured childless couples that copulation on the bed would bring immediate conception.[40]

Although "well meant, and truly commendable so far as it operates," commented Peter Middleton in 1769, the licensing law passed in 1760 was "evidently inadequate to remedy all the Mischiefs then complain'd of. . . ."[41] Apparently the law met much the same fate that, during the next century, would befall most New York laws which regulated medical practice. By and large, public authorities failed to enforce them, and the citizenry ignored them.[42] In the 1760s enforcement proved a futile task for a city with no police force and with a populace unsympathetic to the law. Even many of those New Yorkers who resented dishonest charlatans had no quarrel with conscientious empirics. The empiric, like any good artisan, relied on a down-to-earth approach that was familiar, comprehensible, and geared to results.[43]

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[37] Middleton, *Medical Discourse*, 64; *Journal of the Votes and Proceedings of the General Assembly Of the Colony of New-York* [1691-1765] (New York, 1764-66), II, 608, 613, 614; *Journal of the Legislative Council Of the Colony of New-York* [1691-1775] (Albany, 1861), II, 1406

[38] *N. Y. Mercury*, Jan 10, 1763; *New-York Journal, or General Advertiser*, March 14, 1771. I have not, anyway, come across a public or private statement by anyone during these years that he had been licensed under the privisions of the 1760 act. In contrast, midwives, who were not covered by the 1760 act but who were required by a 1731 city law to take an oath regarding their practice, did occasionally advertise that they had been examined by the "Faculty in this City " See the *N Y. Gazette; and the Weekly Mercury*, July 4, 1768, *N. Y. Journal, or General Advertiser*, May 30, 1771.

[39] Duffy, *Public Health in New York City*, 66

[40] *N. Y Journal, or General Advertiser*, Aug 23, 1770, July 29, 1773; Grete de Francesco, *The Power of the Charlatan* (New Haven, 1939), 202-04; King, *Medical World of the Eighteenth Century*, 53.

[41] Middleton, *Medical Discourse*, 64

[42] Joseph F. Kett, *The Formation of the American Medical Profession. The Role of Institutions, 1780-1860* (New Haven Yale Univ. Press, 1968), 16-17, 20-22. An essayist in the *N. Y. Mercury* (Aug. 25, 1766) stated flatly that "no Law" had been "put in Execution to bring them [charlatans and empirics] to the Bar of Examination, but uncontroul'd they proceed. . . ."

[43] Bell, "Portrait of the Colonial physician," 510.

The "professionals," however, viewed the quacks and empirics with defiance. Middleton and his associates blamed the empirics for, among other things, perpetuating medicine's inferior status.[44] Signs abounded that most members of the city's upper class continued to hold medicine in low esteem, even though they might recognize the worth of a John Jones or a Peter Middleton. How else to explain the private jokes about the "black Art" and the "Profession that does more Mischief than them all," or the public denunciations of doctors as "merciless Butchers of Human Kind," or the enthusiasm for performances of such satirical attacks on doctors as *The Mock Doctor; or, The Dumb Lady Cured* and *The Anatomist or Sham Doctor*, or, finally, the consistency with which the city's elite directed its sons toward mercantile and law careers and away from medicine.[45]

Even more galling to the "professionals" and their associates was the failure of many New Yorkers, including some who were "otherwise valuable for their Penetration and Good Sense," to distinguish carefully between reputable doctors and "the most obscure and superficial *Traders* in Physic."[46] New Yorkers regularly patronized the city's better known empirics.[47] Charlatans also found the city a profitable marketplace — or so their frequent visits suggest. As a result, claimed Middleton, the doctor "of Modesty and real Merit" occasionally lost some of his business or never attracted what he deserved in the first place.[48] Even a man of Clossy's stature had a difficult time establishing a practice.[49] The city's better trained doctors thus looked upon empirics and quacks with an antipathy nurtured not only by professional scorn and social resentment but also, in some cases, by economic rivalry.[50]

In the mid-1760s New York's medical leaders finally agreed that a medical school offered a feasible solution to the city's medical jumble. A school had

[44] Middleton, *Medical Discourse*, 61-64; Clossy, "Uses of Anatomy," Saffron, *Samuel Clossy*, cxv-cxvi, *N. Y. Mercury*, Aug 25, 1766.

[45] John Watts to Isaac Barre, Nov 15, 1763, *NYHS Collections*, 1928, *61* 198, Klein, *Independent Reflector*, 140 (Feb. 15, 1753), *N Y Mercury*, Dec 14, 1761, Thomas J. Wertenbaker, *The Golden Age of Colonial Culture*, 2nd ed. (New York: New York Univ Press, 1949), 53, Saffron, *Samuel Clossy*, lvi; David C Humphrey, King's College in the City of New York, 1754-1776 (unpubl. Ph.D diss , Northwestern Univ., 1968), 347-49, 356, 362, 588-89.

[46] Middleton, *Medical Discourse*, 63; *N. Y. Mercury*, Aug 25, 1766

[47] At least such is suggested by the popular support of a doctor like Roelof Kierstede (see n 18) and the durability of a doctor like Englebart Kemmena (see Heaton, "Medicine in New York," 26, and *N Y Journal, or, the General Advertiser*, Nov 23, 1775).

[48] Middleton, *Medical Discourse*, 63.

[49] John Bard to Samuel Bard, Jan. 17, 1764, BCL.

[50] By and large, however, professional physicians appear to have established fairly lucrative practices. See Jackson Turner Main, *The Social Structure of Revolutionary America* (Princeton, N. J · Princeton Univ Press, 1965), 99-100, 145-46

been an "Object of Speculation" before then, according to Peter Middleton.[51] Samuel Bard had been mulling it over since 1762, when he learned that John Morgan, a fellow student at Edinburgh, intended to establish the colonies' first medical school at Philadelphia. Bard shared with Morgan and several other American students at Edinburgh not only a concern for professional standards but also an awakened sense of cultural nationalism, a desire to promote the cultural stature and independence of the young colonies by building an American "Edinburgh."[52] Samuel Clossy took a more concrete step toward founding a school in New York when he launched his anatomy lectures in 1763. But the turning point came in 1765. Just at the time when the New York medical community, through the addition of new members like Clossy, Samuel Bard, and James Smith, reached a stage where it could sustain a school, Morgan showed the way by organizing a school in conjunction with the College of Philadelphia. By following Philadelphia's "laudable Example," the New Yorkers would be able to train systematically a corps of young doctors in the scientific and ethical conceptions which they regarded as the bedrock of professional practice.[53] Moreover, by doing so they would eliminate the contradiction inherent in their contention that the city should eradicate the practice of doctors considered incompetent by the "professionals" even though there was little provision for educating competent ones.

While implementation of the 1760 licensing law depended on the cooperation of public officials and others outside the profession, New York's medical leaders expected to organize and conduct a medical school largely by drawing on their own resources. They did, however, need to persuade King's College, the colony's only college, to take the school under its wing and grant degrees to its graduates. The degree would serve, first of all, as a "licence to practise," without further examination by a licensing agency, just as an Oxford or Cambridge medical degree legally and professionally entitled its holder to practice. Second, the degree would testify to a doctor's merit and provide the public with an easy and reliable means of distinguishing competent from incompetent practitioners. As Peter Middleton explained, the "Uncertainty of forming an adequate Opinion, of the Abilities and Judgment of such as shall henceforth practise the Healing Art among us, and which has been so frequently and justly complained of . . . , [would] be effectually removed." Third, by conferring a badge of distinction that reflected the achievement of minimum professional standards and that qualified its recipient "to enter legally upon the Practice of Physic," the "professionals" probably expected that more rigorous enforcement of the 1760 licensing law would eventually become feasible. As the public learned to identify the professionally trained doctor and to think of him as exclusively qualified to heal, doctors who failed to obtain medical degrees from King's College or some other reputable school or who failed to demonstrate competence when examined under the procedures established in 1760 might be barred from practice.[54]

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[51] Middleton, *Medical Discourse*, 51

[52] Samuel Bard to John Bard, Dec. 29, 1762, NYAM, Whitfield J Bell, Jr., *John Morgan, Continental Doctor* (Philadelphia. Univ of Pennsylvania Press, 1965), 70-73 Historians often give Samuel Bard most of the credit for founding the medical school (see, for instance, Daniel H. Calhoun, *Professional Lives in America. Structure and Aspiration, 1750-1850* (Cambridge, Mass.: Harvard Univ Press, 1965), 27-28; and Shryock, *Medicine and Society*, 25). There is no reason for doing so Morris Saffron justifiably attacks the "Bardian legend" in *Samuel Clossy*, lxxvi

[53] Middleton, *Medical Discourse*, 51

By educating "such as intend the Practice of Physic, especially in this City and Colony," a medical school thus was expected to improve the quality of medical practice in New York, "place the whole Profession above the Contempt and Jest of Mankind" (in other words, make it socially respectable in the eyes of New York's upper class), and give professional practice a stability that was unattainable as long as medical empirics and imposters successfully diverted public attention away from "responsible" doctors. In their quest for professionalization through an alliance with King's College, New York medical leaders set out on a path similar to that followed earlier in the century by Scottish physicians and surgeons in Edinburgh and Glasgow. In the 1720s, for instance, Edinburgh practitioners moved to upgrade the standards of medical practice by working through the University of Edinburgh. On recommendation of the Edinburgh Royal College of Physicians, the Town Council established a regular medical faculty at the university in 1726. Where Edinburgh formerly had awarded M. D.'s on an honorary basis, now the physicians and surgeons on the medical faculty set up stringent criteria that gradually transformed the M. D. degree into a symbol of excellence. The College of Physicians and Surgeons in mid-century Glasgow also strengthened its ties to the town's university, supporting the development of a medical faculty and urging high standards. By the 1770s an M. D. from Glasgow was gaining the stature previously precluded by the university's habit of granting M. D.'s in absentia and without examination.[55]

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[54] Samuel Clossy, John Jones, and Samuel Bard to the College Governors, read at Governors meeting of Nov. 15, 1774, College Papers, Special Collections, Columbia University Library (referred to hereafter as CUSC), Middleton, *Medical Discourse*, 64; *N. Y. Mercury*, Nov 9, 1767

[55] *N. Y. Mercury*, Nov 9, 1767; Middleton, *Medical Discourse*, 64, Clossy, "Uses of Anatomy," Saffron, *Samuel Clossy*, cxvi; McDaniel, "John Jones' Introductory Lecture," 187. See also especially on the effort to gain public support for professional physicians, an anonymous, three-part essay, entitled "The Duties of Patients and Physicians considered," which appeared in the *N. Y. Gazette; or, the Weekly Post-Boy*, May 21, May 28, June 4, 1767. On Edinburgh and Glasgow see Vera and Bonnie Bullough, "The causes of the Scottish medical renaissance of the eighteenth century," *Bull Hist Med*, Jan.-Feb 1971, *45*: 23-26

However, proponents of the King's College Medical School did not anticipate achieving their goals by using the institution to reproduce British guild distinctions among physicians, surgeons, and apothecaries, whereas the Edinburgh Royal College of Physicians took several steps during the 1750s to increase the separation among the three groups. It was John Morgan who insisted that American physicians, like physicians in "great Britain and all polished countries," should leave surgery to the surgeons and the preparation and dispensing of drugs to apothecaries. Morgan thus hoped that most graduates of Philadelphia's medical school would become physicians in the sense that the Royal College of Physicians used the term, with perhaps a few students turning to surgery.[56] However, even among British doctors such specialization was rare outside of cities like London, Dublin, and Edinburgh. The typical colonial doctor combined all three functions. Advocates of a medical school in New York expected its graduates to concentrate on a career either as a physician or a surgeon, but not one to the exclusion of the other and not without following the colonial practice of serving as one's own pharmacist.[57]

Indeed, the comprehensive practice of the colonial doctor furnished supporters of a medical school with an additional argument against relying solely on apprenticeship, the usual means of education for those doctors who had had any medical education at all. As one newspaper essayist complained in 1766:

> The mechanic, to acquire the lowest Trade, serves a much longer Time than most of the Students of Physic do to learn . . . to be DOCTORS. Can any [but] the most ignorant imagine that an Apprenticeship of a few Years, with an intruding Empirick, who knows nothing, comparatively, himself, can . . . [educate] the most sanguine Genius in those three Branches that are here center'd in one: *viz.* Physick, Surgery, and Pharmacy![58]

The duration of an apprenticeship varied, but three or four years was common. If the length of an apprentice's term struck some observers as brief, the greater deficiency lay in the narrow character of the preparation. Obviously an empiric devoted minor attention to the scientific and ethical dimensions of medicine. But even a professional was hard pressed to provide by himself the broad theoretical and practical exposure to medicine which a medical faculty of several professors could offer. A master found his efforts circumscribed by the limitations on his time, his library, and the range of his knowledge and experience, as well as by his lack of the equipment that facilitated the teaching of anatomy and natural philosophy. Moreover, since masters charged fees — £80 to £100 per annum for room, board, and education was not an unusual fee for a well-established doctor — the inspiration to teach was often overshadowed by the desire for an extra source of income and for cheap labor to perform rudimentary tasks. As a result, apprenticeship education was notoriously uneven. Variables like the length of the term, the competence of the master, and the degree of his interest in educating his apprentices all contributed to the difficulty in judging the quality of an apprentice-trained practitioner.[59]

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[56] John Morgan, *A Discourse upon the Institution of Medical Schools in America* (Philadelphia, 1765), xv-xviii, 14, 18, 30, 40-45; Bell, *John Morgan*, 71.

[57] John Bard to Samuel Bard, Dec. 11, 1765, NYAM, Samuel Bard, *Discourse upon the Duties*, 12; Samuel Bard to John Morgan, Jan 21, 1767, Autograph File, College of Physicians of Philadelphia (referred to hereafter as COPOP); Middleton, *Medical Discourse*, 60-61, 66, McDaniel, "John Jones' Introductory Lecture," 183-87, Clossy, "Uses of Anatomy," Saffron, *Samuel Clossy*, cvii-cxv

[58] *N Y Mercury*, Aug 25, 1766.

A medical school, however, would "rescue this beneficent Branch of Learning from the Obscurity which still continues to veil it in this place . . . ," wrote John Jones, Peter Middleton, Samuel Clossy, Samuel Bard, and James Smith to the governors of King's College on August 4, 1767. The five men urged that they be appointed professors in the school, with "every honorary Mark of Respect" which the governors could bestow. The next day Dr. John Van Brugh Tennent asked that he be included on the medical faculty.[60] The governors did not hesitate to grant both requests, despite the fact that four years earlier they had rejected a proposal for a medical school tendered by James Jay, the first New Yorker to earn an M. D. from Edinburgh.

While raising funds for King's College in England, James Jay had learned of plans for a medical school in Philadelphia. He modestly suggested that King's College counter Philadelphia's move by appointing a medical faculty to consist of Jay and two or three physicians whom he could "introduce" to New York, each to receive an annual salary of £100 sterling.[61] The scheme charmed neither the city's medical community, who no doubt resented Jay's attempt to bypass them, nor the college governors, who offered the same objection to Jay that they used in 1764 to deny Samuel Clossy a professorship in anatomy: the college funds were "so overchargd."[62] Between 1763 and 1767, however, the college endowment tripled to more than £15,000 — thanks largely to Jay's project in England — thus easing the governors' apprehensions about assuming new burdens. Moreover, the petitioners of 1767 apparently agreed to forego salaries and rely on student fees for income, so that the founding of a medical school required little financial commitment on the governors' part. Also, Myles Cooper was by now firmly entrenched as college president after four years in office, and he looked forward to turning his provincial college into a university like Oxford. The founding of a medical school in Philadelphia provided all the more incentive to get on with it, while a bitter and still unresolved dispute between the governors and Jay over his management of the English funds ruled out Jay's participation in the undertaking.[63]

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[59] Unless otherwise noted, figures throughout the essay refer to pounds New York currency. Statements on the cost, duration, and character of medical apprenticeship are based on apprenticeship practices in New Jersey, Pennsylvania, and Virginia as well as New York, since the data on New York is very spotty See especially Samuel McKee, *Labor in Colonial New York, 1664-1776* (New York: Columbia Univ Press, 1935), 86-87; Stephen Wickes, *History of Medicine in New Jersey* (Newark, N J., 1879), 36, 100-01; Wyndham B. Blanton, *Medicine in Virginia in the Eighteenth Century* (Richmond: Garrett & Massie, 1931), 76-81, Bell, *John Morgan*, 118-19, 154, Benjamin Rush to Mrs Rush [July 23, 1776], Butterfield, *Letters of Benjamin Rush*, I 106.

[60] Samuel Clossy *et al* to Governors of King's College, Aug. 4, 1767, and Tennent to Governors of King's College, Aug. 5, 1767, both reproduced in Stookey, *Colonial Medical Education*, 48-51 Just why John Bard did not serve on the medical faculty is not known, but "the confined circumstances of his Education" (Samuel Bard, Biographical account of his father, n. d , BCL) and his lack of a medical degree militated against his participation.

[61] James Jay to Committee of College Governors, April 19, 1763, James Jay Papers, CUSC

The college governors thus responded promptly to the August 1767 proposals by appointing a committee of three governors to work out the details of the school with the six professors.[64] The professors had already suggested a set of courses — anatomy, surgery, the theory and practice of medicine, chemistry, *materia medica,* and midwifery — which reflected their familiarity with the curricula at Edinburgh and Leyden. However, the professors and the governors' committee settled on degree requirements which selectively combined features common at Edinburgh and Leyden with those at Oxford, resulting in a program that closely resembled the one established earlier that year by the College of Philadelphia. Students could earn a Bachelor of Medicine degree three years after matriculating if they attended "at least, one complete Course of Lectures under each Professor," passed a general examination upon finishing their course work, and, for those who did not have a B. A., demonstrated a "competent Knowledge" of Latin and natural philosophy. A student who had apprenticed for three years to a reputable practitioner became eligible for the M. B. degree two years after matriculation. While the M. B. degree served as a "licence to practice, and a Certificate of . . . having attended the College," the college reserved its "heighest Honor" for the M. D. degree. Requirements for an M. D. included at least a year's interval after earning an M. B., a second round of courses, a second examination, a minimum age of twenty-two, and the publication and public defense of a "Treatise upon some *Medical Subject.*"[65]

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[62] Minutes of the Governors of the College of the Province of New York, 1755-1770, facsimiles (referred to hereafter as Governors Minutes), June 22, 1763, Columbiana, Columbia University Library (referred to hereafter as Columbiana); John Watts to General Monckton, May 16, 1764, *NYHS Collections, 61.* 254, Samuel Bard to John Bard, Sept. 4 [1763 ?], NYAM. Early in 1764 Jay was still seeking out "2 or 3 Physicians" for professorships in the school. James Jay to James Duane, March 12, 1764, Duane Papers (1683-1765), New York Historical Society.

[63] Humphrey, King's College, 219-29, 256-59

[64] Governors Minutes, Aug. 14, 1767, Columbiana.

On November 2, 1767, New Yorkers celebrated the opening of the colony's first medical school. The governors and faculty of King's College, the governor of New York, the "Judges of the Supreme Court in their Robes, and the Gentlemen of the Law in their Gowns . . . walked in Procession to the College-Hall; where they were entertained with a very elegant and learned Discourse, by Doctor Middleton. . . ." The *New York Mercury* noted confidently that the "Satisfaction of the learned and splendid Audience on this Occasion, was universal. . . ." The *Mercury* also expressed a hope that the widespread enthusiasm for the school would "recommend it to the attention" of prospective doctors, especially those who planned to practice in the city and colony of New York. The *Mercury* had put its finger on the crucial issue that lay ahead.[66]

II

The establishment of a medical school today requires a vast commitment of social resources. Staffing alone poses a major task. Building and equipment costs rapidly reach astronomical figures. For instance, by 1970 estimates of the total cost for establishing New York City's Mount Sinai School of Medicine, which admitted its first class in 1968, had exceeded $150,000,000. Only two-thirds of that sum had been raised by 1970, despite grants from the federal and state governments and from numerous private donors.[67] Obviously it is impossible to establish a medical school without widespread support. On the other hand, once a school opens there is no difficulty in attracting students. In 1971 Mount Sinai admitted forty-three first-year students. About eighteen hundred applied, even though minimum yearly expenses for tuition, room, board, and books were estimated at $4,700.[68]

Against this background, the founding of the King's College Medical School looks like today's world turned upside down. Once the medical faculty and the college governors reached an agreement on the project, starting the school was easy. The problem was attracting students. Indeed, the King's College Medical School opened in 1767 with no new capital investment and virtually no start-up expenses. The professors lectured in the college hall, while the college and the professors already owned most of the necessary equipment. Faculty remuneration came from student fees. In other words, since the founders of the medical school did not have to seek outside support, they were able to launch their school despite widespread public indifference and despite some hostility toward the school among a few city doctors.[69] Nor did the building of a city hospital, which would permit clinical instruction for medical students, reflect public enthusiasm for the professors' educational reforms. Samuel Bard, Peter Middleton, and John Jones did, it is true, initiate the campaign for the hospital in 1769 with clinical instruction in mind. And construction of the building between 1773 and 1775 did depend heavily on public funds. But the hospital was touted and supported primarily as a way to provide care for New York's sick poor.[70]

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[65] *N Y. Mercury*, Oct. 12, 1767, Samuel Clossy *et al* to the College Governors, read at meeting of Nov 15, 1774, College Papers, CUSC; Frederick C. Waite, "The degree of Bachelor of Medicine in the American Colonies and the United States," *Yale J Biol. & Med.*, March 1938, *10* 310-14.

[66] *N Y Mercury*, Nov 9, 1767

[67] Robert J. Samuelson, "Mt Sinai How a hospital builds a medical school," *Science*, Nov. 1967, *158* 618, "M D.'s needed," *New York Times*, May 26, 1970, p. 40.

[68] *Medical School Admission Requirements, U.S.A and Canada, 1971-72, 22nd Edition* (Washington, D C , 1971), 197, *Mount Sinai School of Medicine Bulletin, 1971-72* (New York, 1971), 12, 20

Students and their families, unlike the professors, could not regard so lightly public apathy toward the school. The time and funds required to earn a King's College degree forced them to question whether it was worth it. Some prospective doctors decided it was not. During the first three years, 1767 to 1769, thirteen students matriculated in the M. B. program; eleven completed it. However, the college could not sustain this creditable record. During the six years from 1770 to 1775 only five students matriculated in the M. B. program; one completed it. Not surprisingly, throughout the nine years only two M. B.'s proceeded to take their M. D.'s[71] The eighteen matriculants by no means comprised the entire audience at the medical lectures, or there would have been little point to offering courses after 1772. Courses were open to matriculants and non-matriculants alike. In each case the students paid a fee directly to the professor instead of tuition to the school. Samuel Clossy earned more than £100 in student fees each winter for teaching anatomy, so he attracted in the neighborhood of ten pupils a year.[72] Undoubtedly non-matriculants attended the lectures of other medical professors, but it is impossible to determine the number of students involved. Liberal arts pupils at King's College, especially those who planned careers in medicine, provided one source of non-matriculated students. A friend of Alexander Hamilton testified that Hamilton, who "originally destined himself to the Science of Physic," attended Clossy's lectures while an undergraduate at King's College.[73] At least twelve liberal arts pupils at King's College between 1767 and 1776 became doctors without officially enrolling in the medical school.[74]

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[69] Middleton, *Medical Discourse*, 52-53

[70] *Ibid* , 59-60, Bard, *Discourse upon the Duties*, i-iii, 15-17, Stookey, *Colonial Medical Education*, 68-74

[71] Matricula of King's College, Herbert and Carol Schneider, eds., *Samuel Johnson, President of King's College: His Career and Writings* (New York: Columbia Univ Press, 1929), IV, 253-60 The evidence suggests that John Augustus Graham, who received an M. B in 1772, matriculated in 1768 or 1769, although he is not listed as a matriculant. There is no concrete evidence that the Revolutionary climate of the early 1770s accounted in part for the decline in matriculants, although it is possible The number of matriculants in the liberal arts college increased dramatically in the early 1770s.

[72] Claim of Samuel Clossy, American Loyalist Transcripts, printed in Saffron, *Samuel Clossy*, lxxxix, xci; *N. Y. Mercury*, Sept 30, 1765, Nov 2, 1767; *N Y Journal; or, the General Advertiser*, Sept. 28, 1769; Minutes

The medical faculty thus found that the number of students justified regular course offerings. But the professors intended to provide a comprehensive medical education, not incidental instruction in a course or two; and they expected students to work for a degree which would serve both as a license to practice and as a means by which the public could distinguish the competent from the incompetent doctor. The steep drop-off in the number of matriculants after 1769 thus represented a real failure, even though students continued to attend the lectures.

As prospective students and their families weighed the costs of a medical education at King's College against its potential benefits, they confronted several discouraging factors. First was the size of the financial investment. An M. B. candidate spent a total of £25 to £30 just in fees for his courses (King's College liberal arts students paid the highest liberal arts tuition in the colonies: £20 for four years). Other expenses might include a diploma fee, charges for tutoring in Latin, the cost of clothes, books, and paper, and, for those whose families did not live in New York City, substantial sums for room, board, and such items as firewood, candles, washing, and mending. Although medical students lived in town, not in the college building, college rates provide some perspective on living costs. Charges for room and board for seven months (the usual length of medical courses) amounted to about £19.[75]

A medical school education thus cost more than most New Yorkers could afford. For instance, about forty-five percent of New York's adult men were farmers, and the average farm produced an annual cash surplus of about £25.

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of the Governors of the Corporation of King's College, 1770-1781, draft, photostats, May 12, 1772, Columbiana (the minutes for these years exist only in draft and will be referred to hereafter as Governors Minutes, draft). Liberal arts students, who paid tuition, may have received some credit toward fees for medical courses.

[73] Nathan Schachner, ed., "Alexander Hamilton viewed by his friends: The narratives of Robert Troup and Hercules Mulligan," *William and Mary Quarterly*, 3rd ser , April 1947, *4:* 212.

[74] Based on data summarized in Humphrey, King's College, 364-65

[75] *N. Y Mercury*, Sept. 30, 1765, Nov. 2, 1767; *N. Y Gazette, and the Weekly Mercury*, May 28, 1770, July 25, 1774; *N Y Journal, or, the General Advertiser*, Sept. 28, 1769; Beverly McAnear, "The selection of an alma mater by pre-Revolutionary students," *Pennsylvania Magazine of History and Biography*, Oct. 1949, *73.* 432-34; Humphrey, King's College, 373

Another thirty-five or forty percent of New York's adult males consisted of slaves, indentured servants, agricultural laborers, urban workers, and mariners. The last three groups earned annual wages of £25 to £60. Even most artisans, who comprised about ten percent of the adult men, earned less than £120 a year, with wage-earning artisans averaging about £75 to £85 a year.[76] The irony of the situation lay in the fact that, if most New York families found the expense of medical education extremely burdensome, sons of New York's wealthiest families rarely chose the medical profession as a career. The medical school thus was likely to draw its students from families where the fathers were shopkeepers, lesser merchants, doctors, ministers, and prosperous artisans and farmers. Such families, though they fell in the upper twenty percent of New York's socio-economic hierarchy, did not belong to the elite who dominated the colony's economic, social, and political life.

Costs did not bar these families from patronizing the King's College Medical School. But other factors might make them wonder whether the onerous financial undertaking was worth it, particularly if they regarded a medical school education as supplementary to apprenticeship. Apprenticeship, after all, retained its public standing as a legitimate means of medical education. Even the College of Philadelphia obliged each M. B. candidate to serve a "sufficient apprenticeship."[77] In contrast, the College of New York officially ignored apprenticeship, neither requiring it for a degree nor giving much credit to those students who apprenticed (they could earn an M. B. in two instead of three years after matriculation if they met all other requirements). On the surface this seemed to ease the demands on the medical student, but King's College provided no equivalent experience whether in preparing drugs, in observing a doctor while he practiced, or in interacting occasionally with patients. King's College, unlike the College of Philadelphia, could not even offer clinical instruction, since the city lacked a hospital. The hopes that mounted with the laying of a cornerstone in 1773 evaporated in 1775 when fire gutted the unfinished hospital.

Thus the King's College medical faculty could no more claim to provide a rounded medical education than could proponents of apprenticeship. But to combine an apprenticeship with an M. B. program would consume large amounts of time and money. New Jersey's professional physicians responded to the establishment of medical schools in the colonies by tightening apprenticeship practices in New Jersey. Members of the recently founded (1766)

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[76] The data are very tentative and are drawn from Main, *Social Structure of Revolutionary America*, chs. 1, 3, 4.

[77] Quoted by Waite, "Degree of Bachelor of Medicine," 314.

New Jersey Medical Society agreed in 1767 not to accept an apprentice for less than four years, only one of which could be spent at a medical school. They settled on an annual apprentice fee of £100 New Jersey currency.[78] Such an arrangement hardly encouraged the pursuit of a medical degree on top of an apprenticeship. The more attractive compromise — for those who wished to attend medical school at all — was to take two or three courses during one winter.

Prospective physicians in New York found little more encouragement to matriculate in the medical school. No public statute or professional agreement spurred them to earn a degree. Nor did a degree have much market value outside New York City, where scattered settlements and extensive reliance on lay medicine and self-medication made it difficult to recoup a hefty financial investment in education.[79] Moreover, students who ignored the degree program could take two or three courses without diverting their attention to passing the rigourous Latin examination, which was conducted in the college hall before the student body. In 1774 the medical faculty insisted that it was "absolutely necessary" to shift the Latin examination to the president's chambers and allow some leeway to students who "should not appear so well informed in this respect. . . ." The college governors ignored the request.[80]

All these considerations might have slipped into the background if the medical school graduates could have demonstrated a decisive superiority over untrained and apprentice-trained doctors. Chances are that M. B. recipients performed more competently than young doctors who chose not to attend the medical school. But this was not necessarily so, and the differences were not dramatic enough to catch and hold the public eye. The problem proved especially hard to overcome because the school prided itself on what would turn out to be its weakest point: its emphasis on medical theory.

The medical professors, like many eighteenth-century medical scientists, were caught in a stream of thinking that often flowed away from their goal. The striking breakthroughs in physical science during the previous century spurred them to seek a similar grand synthesis which would bring order out of their chaotic data on human physiology and pathology, just as Newton's *Principia* had dramatically clarified the world of mechanics and astronomy.

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[78] Wickes, *Medicine in New Jersey*, 36, David L. Cowen, *Medicine and Health in New Jersey. A History* (Princeton, N. J.: D Van Nostrand, 1964), 7.

[79] Bell, "Medical practice in Colonial America," 446, 447, Main, *Social Structure of Revolutionary America*, 99, 145.

[80] Samuel Clossy *et al.* to College Governors, read at meeting of Nov 15, 1774, College Papers, CUSC, Governors Minutes, draft, Nov. 15, 1774, Columbiana. In 1772 the Governors considered making a B A. a prerequisite to admission into the medical school See *ibid.*, May 12, 1772.

But the penchant to generalize on the basis of their limited knowledge resulted in overarching theories with skimpy empirical foundations.[81] The medical faculty thus yearned to arm its students with medical theories which missed the mark so widely that their value to the prospective physician depended less on scientific validity than on social legitimacy: some patients believed in them and expected their physicians to know and use them. Peter Middleton, for instance, proposed to counter "empiricism" with what was little more than an updated version of age-old humoral pathology. When confronted with a patient's fever, declared Middleton, the rational physician examines the state of the patient's "circulating Fluids." Is the patient's blood excessive, or thin, or viscous, or suffering from "a *putrid Dissolution*"?[82] If excessive, bleed him. If thin, prescribe a diet and drugs which will thicken it, and so on. Humoral pathologists were capable of ascribing most any disease to a condition of the bodily fluids. Fortunately, the limitations on the value of the King's College medical curriculum were not defined exclusively by the limits of eighteenth-century medical theory, but the handicap was hard to surmount.

The King's College Medical School offered courses each year until the Revolution closed the school in April 1776. The professors normally lectured from November to May, but on at least two occasions a course was presented during the summer months. Neither James Smith nor John Van Brugh Tennent played an important role in the school's operation. Both men may have lectured the first two years, but by early 1770 Tennent had died and Smith had left New York. The annual mainstays of the curriculum were Samuel Clossy in anatomy, John Jones in surgery, Peter Middleton in the theory of medicine, and Samuel Bard in the practice of medicine. With less frequency the medical school offered courses in *materia medica,* taught by Clossy and Middleton, and in chemistry, taught first by Smith, then by Bard. Tennant may have lectured on midwifery before his death.[83]

Surviving sources permit an exploration of four of the medical school courses. Samuel Bard's lectures in chemistry and the practice of medicine demonstrate as well as any both the roots and the limitations of the King's College medical curriculum. Bard was not a chemist. When the college named him Professor of Chemistry in 1770 he simply turned to the lectures notes he had taken in William Cullen's chemistry courses at Edinburgh, just as John Morgan did for his chemistry course at the College of Philadelphia.[84] Although Cullen himself could not claim any significant chemical discoveries and had published little in the area, his students found him an inspiring teacher who organized his material effectively and utilized the better writings on chemistry, particularly *Elementa Chemiae* by Hermann Boerhaave (1668-1738). Cullen impressed Bard so much that the New Yorker took chemistry courses with Cullen three years running.[85]

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[81] Shryock, *Development of Modern Medicine,* ch 2

[82] Middleton, *Medical Discourse,* 54.

[83] *N Y. Mercury,* Oct 12, Nov 2, Nov 9, 1767, *N. Y. Gazette, and the Weekly Mercury,* Oct. 31, 1768, Sept 25, 1769, Jan. 8, May 28, Sept. 10, Nov. 5, 1770, Nov. 4, 1771, May 4, Oct. 19, Nov 9, 1772, Nov 1, 1773, supplement, Jan. 10, July 25, Sept. 5, 1774, Jan 16, Sept 25, 1775; *N. Y. Journal; or, the General Advertiser,* Oct. 17, 1771, Oct 22, 1772, April 25, 1776, James Graham's Lecture Tickets, 1773-75, New York Historical Society, Governors Minutes, March 20, 1770, Hugh Gaine, *Gaine's Universal Register, or, American and British Kalendar, For the Year 1775* (New York, n. d), 105. I have not been able to confirm that other courses besides Clossy's were offered in 1775-76.

Bard followed Cullen and most eighteenth-century professors of chemistry by focusing on the "application of chemistry to the theory of physick, and the art of pharmacy."[86] The heart of Bard's course was a Linnaean-like classification and analysis of all "chemical bodies," which Bard borrowed from Cullen. The taxonomy started with six classes (saline, inflammable, metallic, earthy, watery, and aerial), then progressively subdivided each class (saline bodies into simple and compound, simple salts into acids and alkalis, alkalis into fixed and volatile, fixed alkalis into vegetable and fossil, and so on). Bard first presented an overview of the scheme, so that students would learn a systematic way of defining chemical terms and not use them "in the loose vague Sence of the generallity of Chemists." Then he explored the "particular history" of each substance. Is it "native" or "artificial"? If native, how is it found in its natural state? If artificial, what are the different methods of its production? and so on.[87]

Just how valuable Bard's students found this introduction to chemistry is not readily ascertainable, but the utility of the course was narrowly circumscribed by the pre-modern state of chemical science. Bard paid homage to the four Aristotelian elements: fire, earth, air, and water; and he taught his pupils the then popular theories of phlogiston and elective attraction. Unaware of the existence of oxygen, Bard could not explain such an essential physiological process as respiration.[88]

Samuel Bard exercised more initiative in organizing his course on the practice of medicine, since he could draw on both his wide reading and his personal experience. The course consisted of a survey of human diseases, such as smallpox, quinsy, "putrid malignant fevers," measles, palsy, and pleuropneumonia. For each disease, Bard outlined the symptoms, causes, and methods of cure, in a manner similar to that in Hermann Boerhaave's *Aphorisms*.[89] However, Bard felt severely handicapped by the absence of a hospital, which, he claimed, "affords the best and only means of properly instructing Pupils in the Practice of Medicine. . . ."[90]

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[84] John Hodge's notes on John Morgan's chemistry lectures for 1766, COPOP

[85] Andrew Kent, "William Cullen's History of Chemistry," and Douglas Guthrie, "William Cullen, M. D., and his Times," both in Andrew Kent, ed., *An Eighteenth Century Lectureship in Chemistry* . (Glasgow. Jackson, 1950), 15, 27, 60, Whitfield Bell, Jr , "Some American students of 'That Shining Oracle of Physic,' Dr. William Cullen of Edinburgh, 1755-1766," *Proceedings of the American Philosophical Society*, June 1950, *94*, 275-76, 279

[86] *N. Y Gazette, and the Weekly Mercury*, July 25, 1774.

[87] Samuel Bard, Syllabus, BCL; Samuel Bard to John Bard, March 6, 1763, NYAM.

[88] Samuel Bard, Syllabus, BCL, Samuel Bard to John Bard, Dec. 29, 1762, NYAM

During the years when Bard composed his lectures on the practice of medicine, Hermann Boerhaave's physiological and pathological theories still dominated the thinking of many European and American physicians. Boerhaave developed an elaborate and rather sophisticated theory that traced most diseases to the faulty interaction of the bodily fluids (blood, bodily secretions, etc.) with the bodily solids (body fibers, especially those comprising the blood vessels and lymphatic vessels). Thus one's solids might become too stiff or too lax and disrupt the proper circulation of the fluids, or the fluids themselves might become too thin or too salty. Stiff blood vessels, for instance, exerted excessive action on the blood and thickened it, rendering it susceptible to clotting. The problem could be remedied by bloodletting, which thinned the blood, and by a watery diet and oily medicines, which softened the fibers of the blood vessels.[91] Bard confronted Boerhaave's ideas throughout his medical education. Typically, Bard's professor in the practice of medicine at Edinburgh lectured on Boerhaave's *Aphorisms*.[92] However, through courses, reading, and discussion, Bard learned to admire the work of such British physicians as Thomas Sydenham, John Huxham, John Pringle, John Fothergill, Robert Whytt, and, in particular, William Cullen. Bard's lectures drew on their thinking and research as well as on Boerhaave's.[93]

The influence of Cullen on Bard foreshadowed the popularity that the Edinburgh professor's medical ideas would gain among American physicians after the Revolution. Cullen emphasized much more than Boerhaave the role of nervous and vascular tensions in causing illness.[94] Thus, while Professor John Jones taught the Boerhaavian doctrine that an inflammation might result primarily from an obstruction in the arteries, Bard denied it and argued in his lectures that an inflammation resulted from an increased oscillatory motion of the capillary vessels. In turn, Bard followed Cullen in urging treatment which relaxed the patient. Bard particularly recommended opium, with which he had experimented at Edinburgh. Bard advised his students that he expected opium to gain wide use in the treatment of inflammatory disorders.[95]

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[89] James Graham's notes on Samuel Bard's lectures on the practice of medicine, College of Physicians and Surgeons Papers (referred to hereafter as College of P and S. Papers), CUSC.

[90] Bard, *Discourse upon the Duties*, 17.

[91] King, *Medical World of the Eighteenth Century*, ch. 3.

[92] Alexander Grant, *The Story of the University of Edinburgh During Its First Three Hundred Years* (London, 1884), II, 411, Bell, "Some American students of William Cullen," 279.

[93] James Graham's notes on Bard's lectures, College of P. and S. Papers, CUSC, Bard, *Discourse upon the Duties*, 8.

[94] Shryock, *Medicine and Society*, 66-67

Bard's eclectic approach to the practice of medicine called for only piecemeal use of Cullen's ideas. More often Bard drew on the work of Boerhaave and his followers. In any case, despite variations in theories of pathology, Boerhaave, Cullen, and proponents of other theories prescribed many of the same cures. The King's College students learned from Bard the "Methodus Medendi" that many another eighteenth-century doctor relied upon: bleeding, cupping, purging, the use of emetics, dietetics, medicinal concoctions containing "the Bark" and "snake Root," access to dry cool air, and so on — cures that were effective at times but that were often of dubious value.[96] The problem lay, however, not so much in eighteenth-century therapeutics, but in the defective theories of physiology and pathology they reflected.

Unlike Samuel Bard's two courses, Samuel Clossy's lectures on anatomy utilized a body of knowledge that had reached a modern stage. By the opening of the eighteenth century anatomists had recorded the gross features of the human body. Clossy himself had spent four years at British hospitals probing the causes of disease by dissecting bodies. His lectures reflected this experience as well as his studies in Dublin and London with the likes of George Cleghorn and William Hunter, and his extensive reading in the works of Galen, Andreas Vesalius, Giovanni Battista Morgagni, and numerous other European anatomists.[97]

Clossy organized his lectures in a manner that generally followed the structure of *De humani corporis fabrica* by Andreas Vesalius, whom Clossy regarded as the most distinguished of modern anatomists.[98] Clossy first considered the "Dry" and "Fresh" bones, with their "Cartilages, Ligaments, and Membranes," then discussed the muscles, the arteries and veins, and the nerves, and concluded by examining "all the Viscera of the three Cavities." The last included the cranial cavity — where he examined the brain and the eye — and the thoracic and abdominal cavities. Throughout the lectures Clossy supplemented his discussion of structure with observations on the physiology and pathology of the various parts of the body.[99]

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[95] John Jones' lectures on surgery, COPOP; James Graham's notes on Bard's lectures, College of P and S. Papers, CUSC.

[96] *Ibid.*, Shryock, *Medicine and Society*, 52.

[97] Saffron, *Samuel Clossy*, xvi-xix, Clossy, "Uses of Anatomy," *ibid.*, xcii-cxv; George W. Corner, *Anatomy* (New York: P. B. Hoeber, 1930), 37-38.

[98] "Uses of Anatomy," Saffron, *Samuel Clossy*, xcix.

The spirit of Clossy's course can be grasped by surveying the demonstrations that accompanied his lectures. Among his exhibits were skeletons, individual bones, and numerous anatomical preparations, such as "injected Preparations" showing "the Capillary Vessels of every Muscle," and a "Heart & Lungs injected & finely prepared." Clossy confirmed "the Blood's Motion from Arteries to Veins" by having his students examine the membranes of frogs through a double reflecting microscope. When possible, Clossy illustrated his lectures by dissecting an "Adult Subject."[100]

Although Clossy remained largely unaware of little-explored dimensions of anatomy like histology, he managed to present reasonably accurate data in an empirical framework, thus providing the student with a foundation on which to build his medical knowledge. The stumbling block lay in making effective use of anatomical data. The physician might know the gross structure of the body, but his inadequate understanding of physiology and pathology made it difficult for him to exploit fully his anatomical information in the day-to-day treatment of disease.[101]

Should the doctor turn his hand at surgery, he would make greater use of his anatomical knowledge. When prospective surgeons combined their work under Clossy with study under Professor of Surgery John Jones, they received the soundest preparation available in England's new world colonies. Jones was an intelligent, skillful, and successful surgeon who contributed to the improvement of surgical practice throughout the colonies by publishing his *Plain Concise Practical Remarks on the Treatment of Wounds and Fractures*.[102]

Jones lectured to his students on a variety of pathological conditions, from inflammatory tumors, cancers, encysted tumors, and hernias, to ulcers, burns, general wounds, and gunshot wounds. He explained the cause of each disorder and indicated the means of treatment. Jones approached surgery not as a "low mechanic art," but as a science in which an operation was but "a single point, in the cure of diseases." Thus he discussed medicinal and dietetic therapy, much of it based on Boerhaavian thinking, as well as surgical therapy, and suggested how to integrate all three. Jones based his surgical advice on his own experience and on his familiarity with the work of a large number of European surgeons, among them Percival Pott, Henri Le Dran, Samuel Sharp, and William Hewson.[103]

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[99] *N. Y. Mercury*, Nov. 2, 1767, *N. Y. Gazette; and the Weekly Mercury*, Sept. 10, 1770, Oct. 21, 1771

[100] *Ibid.*, Oct. 21, 1771, *N. Y Mercury*, Nov 2, 1767; Claim of Samuel Clossy, American Loyalist Transcripts, printed in Saffron, *Samuel Clossy*, xc

[101] Shryock, *Medicine and Society*, 49.

[102] The work was published in New York in 1775, in Philadelphia in 1776, and (under the title *The Surgical Works of the Late John Jones, M. D. . . .*) in Philadelphia in 1795

During the concluding section of his course, Jones used cadavers to demonstrate "those methods of operating which are recommended by the best modern Surgeons. . . ." Over the years students watched him demonstrate amputations, castrations, trephinings, tonsillectomies, lithotomies, the removal of various kinds of tumors, and the surgical treatment of inflammations, hernias, emphysema, and hydrocele. Students did not, however, perform operations themselves, although Jones "earnestly" recommended that they practice frequently on dead bodies before starting on "living ones."[104]

Jones' course provided prospective surgeons and physicians with a reasonably comprehensive and up-to-date introduction to surgery and with exposure to the technique of a skilled practitioner. Jones also conveyed a sense that surgery was just as legitimate an area of professional medical practice as internal medicine, contrary to the attitudes which predominated in England and which John Morgan voiced in Philadelphia.[105] However, in spite of Jones' efforts to transform surgery into a respectable science, the surgeon remained on the fringes of eighteenth-century medicine. The dangers of infection and the lack of anesthesia severely hampered him and restricted much of his work to surface disorders. Moreover, current pathological theories furnished little justification for the use of surgery in the treatment of most diseases. As Richard Shryock writes: "Of what avail was surgery if illness resided in the humors: where was the man who could operate on the blood?"[106]

Ideally, the value of the medical curriculum should be explored by examining not what was taught but what students learned and how they used it. Unfortunately, the identity of virtually all the non-matriculants is not known, and data on the matriculants is skimpy. The Revolution not only closed the school; it disrupted the professional lives of its alumni and contributed to their dispersal. Two students did distinguish themselves in post-Revolutionary New York. Samuel Nicoll, M. B. '74 and a recipient of an M. D. from Edinburgh in 1776, served on the Columbia medical faculty in the 1790s; and Nicholas Romayne, who matriculated in 1774 but later switched to Edinburgh, became a dominant and controversial medical figure after the Revolution, serving at various times as president of the New York County Medical Society, president of the college of Physicians and Surgeons of New York, and a professor at several medical schools. But other alumni turned up in such scattered locations as Ulster County, New York; West Suffield, Connecticut; London; and several islands in the West Indies. Unquestionably, the students failed to have the kind of impact on medical practice in New York that the founders of the school anticipated in 1767.[107]

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[103] McDaniel, "John Jones' Introductory Lecture," 181-88, John Jones' lectures on surgery, COPOP

[104] *Ibid.*

[105] McDaniel, "John Jones' Introductory Lecture," 183-87

[106] Shryock, *Medicine and Society*, 59

III

During the mid-1760s medicine throughout the middle colonies seemed to turn the corner toward professionalism. John Morgan and his colleagues established the College of Philadelphia Medical School and Philadelphia's first medical society. Fourteen New Jersey physicians organized the first colony-wide medical society. In unprècedented fashion for colonial doctors, the New Jerseyites agreed to a "Table of Fees and Rates" and rules for apprenticeships, and launched a plan to gain control over entry into medical practice throughout New Jersey.[108] New York City's professional physicians founded a medical society and the colonies' second medical school.

Yet, beneath these surface reforms medical practice continued to look much the same to most colonists. In the 1770s, just as in the 1750s, New Yorkers patronized the city's quacks and empirics. And professionals once again warned New Yorkers "of the deadly Effects, that arise from the Application of the Sick, to illiterate, ignorant, boasting Pretenders."[109] A handful of New York physicians now pointed to their King's College M. B.'s as proof of competence, but other doctors still staked their reputations on outlandish claims, such as being "A Seventh Son of A Seventh Son," while shopkeepers dispensed "wonder drugs" like "Doctor Hill's Newly Improved Great Stomachick Tincture," "The Golden Medical Cephalic Snuff," and "Dr. Ryan's Incomparable Worm-Destroying Sugar Plumbs."[110] In the 1770s, in other words, the professionalization of medicine still depended largely on the efforts of a small group of European-oriented physicians and surgeons, because they had not yet succeeded in convincing many New Yorkers that their goals reflected urgent public needs.

The breakup of the "professionals" during the Revolution thus posed a problem because it eliminated the only source of coherence in the movement to normalize professional medical education in New York. In 1785 Columbia (as King's College was renamed) reestablished its medical school, but only Samuel Bard remained from the pre-Revolutionary faculty. Clossy had returned to Ireland, Jones had moved to Philadelphia, and Middleton had died. Proponents of professional medical education now found their efforts hindered not only by the reluctance of students to pursue medical degrees — Columbia averaged eighteen entrants and two degree recipients annually from 1793 through 1802 — but also by in-fighting among the professionals themselves.[111] A chaotic era ensued, dominated by personal and professional rivalries, and by proliferating medical schools which competed for a limited number of applicants. The combination proved fatal for the Columbia Medical School. Thirty years of medical factionalism and intrigue culminated in 1814 in its dissolution and the absorption of its faculty by the College of Physicians and Surgeons of New York.[112]

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[107] Based on data culled from a wide variety of sources.

[108] Cowen, *Medicine and Health in New Jersey*, 7, 10-14.

[109] *N Y Journal; or, the General Advertiser*, March 14, 1771

[110] *Ibid.*, July 25, 1771; *N. Y Gazette; and the Weekly Mercury*, Aug 8; Aug. 8, supplement, Aug. 22, 1774.

Ironically, the College of Physicians and Surgeons, now united with Columbia, dates its orgin from 1767. The logic may be skewed, but the dating at least provides some compensation for the tendency of medical historians to equate pre-Revolutionary professional medical education with the achievements of John Morgan, William Shippen, and Benjamin Rush at the College of Philadelphia.[113] There is little point, however, in reviving the civic rivalry that spurred New York's "professionals" to found a medical school in 1767 and which surfaced recently in a claim that King's College, not the College of Philadelphia, merits recognition as the first fully established medical school in America since it was "the first to offer *all* the then generally accepted medical courses. . . ."[114] One is much more impressed by the similarities — not the differences — in the pre-Revolutionary histories of the two schools. If the medical curriculum at King's College incorporated much misleading information, so did the curriculum at the College of Philadelphia. If King's College failed to sustain the initial enthusiasm for its M. B. program, the College of Philadelphia graduated twenty-six M. B.'s between 1768 and 1771, then just three more before the Revolution.[115] Proponents of professional education in both cities confronted public indifference and a flourishing community of quacks and empirics. Above all, physicians in Philadelphia and New York were hampered by the rudimentary state of their medical knowledge. The fulfillment of their plans for professionalization awaited the scientific breakthroughs of the nineteenth century.

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[111] M Halsey Thomas, *Columbia University Officers and Alumni, 1754-1857* (New York· Columbia Univ Press, 1936), 178-84.

[112] Stookey, *Colonial Medical Education*, chs. 2-4 Daniel Calhoun (*Professional Lives in America*, 27-28) reads the medical factionalism of the post-Revolutionary period back into the pre-Revolutionary years However, whatever rivalry existed before the Revolution among Samuel Bard, James Jay, Samuel Clossy, and others was of minor consequence, unlike the rivalries of the post-Revolutionary years.

[113] See, for example, the writings of Richard Shryock and Whitfield Bell, Jr

[114] Byron Stookey, "America's two Colonial medical schools," *Bull New York Acad Med*, April 1964, *40*. 270.

[115] Waite, "Degree of Bachelor of Medicine," 314.

THE USE AND ABUSE OF TARTAR EMETIC IN THE 19TH-CENTURY MATERIA MEDICA

JOHN S HALLER, JR.,

> Common antimony may in crude Form, provided it be fine ground, with Safety be administered both to Man and Beast: being mixed from half an Ounce to a whole Ounce amongst their Food, it fattens Horses and Swine; it infallibly cures the Mange in Dogs, in Swine the Measles, a Distemper with Certainty discoverable, upon viewing under the Tongue of these animals.
>
> (John Huxham, *Medical and Chemical Observations on Antimony*, 1756)

> For myself, I am among those who believe that when we shall have attained to anything like precision in the use of the powerful remedies which we now so freely employ, the review of our present practice will be but a melancholy retrospect.
>
> (N. R. Smithe, *Philadelphia Monthly Journal of Medicine and Surgery*, 1827)

Scarcely a metal in the Materia Medica of the nineteenth century acted as energetically upon the human system as did antimony. It performed its function so violently that physicians regarded it as an active poison whose therapeutic use required the most careful discrimination. Although employed by the ancients under the name "stibium" or "stimmi" as an eye paint, and later as an astringent to the eyes and a caustic in cancer and hemorrhoids, not until the seventeenth century did the mineral come into popular use, when chemiatrist Johann Thöld, using the pseudonym of a mythical fifteenth-century Benedictine monk of Erfurt, Basil Valentine, wrote the earliest known treatise on the medical use of antimony. Supposedly, the pseudo-Valentine derived the name antimony (anti-moine, anti-monk, or monks' bane) from the fact that it proved fatal to several monks to whom it was given as a medicine. Thöld claimed to have used the metal in nearly all his medicinal preparations, and in his *Currus triumphalis antimonii* (1604), he urged practitioners to prescribe antimony for syphilis, melancholy, chest pains, the plague, and at the onset of fevers. As a result of Thöld's treatise, a host of antimony compounds were employed during the seventeenth and eighteenth centuries, although because of frequent accidents, the therapeutic use of antimonials suffered alternate periods of fame and controversy. The Faculty of Medicine in Paris, for example, forbade its use in the materia medica from 1566 to 1666, calling it a "virulent poison." The dean of the Paris Faculty, Guy Patin (1601-1672), one of the more famous phlebotomists and opponent to the school of iatro-chemistry, strongly opposed its use, and even when young

Louis XIV was successfully treated for typhoid fever in 1657 with an antimonial mixture known as Poudre de Chartres, Patin vehemently denied its curative effects. Georges Cuvier (1769-1832) likewise claimed that antimony was a dangerous and uncertain medicine that could not always be counted upon to operate uniformly.[1]

Despite notable hostility, physicians prescribed the Kermes Mineral (precipitated sulphide of antimony), first introduced by Johann Glauber in 1651, as a diaphoretic, alterative, and emetic, in epilepsy and hectic fevers. The popular James's powder (Pulvis Jacobi Verus), made from one part oxide of antimony and two parts phosphate of lime, was first employed in 1747 as a sedative and diaphoretic in febrile diseases, and remained a basic remedy throughout the nineteenth century. Because of its tastelessness, doctors prescribed the fever powder for children when quinine was difficult to administer. Thus, as an antiperiodic and antipyrectic in intermittent fevers of children, the antimonial was administered almost as regularly as quinine. Eighteenth-century therapeutist John Fothergill (1712-1780) recommended calcined antimony, in combination with aloes, scammony, and colocynth, which subsequently became known as Fothergill's pills. Plummer's pills, introduced in the 1730s by a professor of chemistry at Edinburgh, containing calomel, sulphurated antimony, and guaiacum, made up with treacle, was prescribed for cutaneous eruptions, secondary syphilis, gout, apoplexy, and diseases commonly classified as plethoric, in which doctors employed antimony as a diaphoretic and emetic to equalize and quiet the circulation. Along with these preparations, doctors used sulphurated antimony and flowers of antimony (oxide of antimony) as a diaphoretic and alterative in scrofula, rheumatism, and cutaneous diseases, antimony iodide as an alternative, and antimony trichloride, better known as butter of antimony, as an external caustic.[2]

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[1] One version of the monk derivation related that Basil Valentine had thrown an antimonial preparation out a window where it was then eaten by pigs. The purgative effect on the pigs caused them later to fatten, a circumstance which led Valentine to administer the antimonial to monks emaciated by long fasts for the purpose of increasing their weight. Unfortunately, the monks died from the experiment. "The modern philological theory," wrote A. C. Wooton, "is that the early Latin stibium and the late Latin antimonium have the same etymological origin. Stibium was the Latinised form of the Greek stimmi. Stimmi declined as stimmid — and this may have found its way into the Arabic through a conjectural isthimmid to the known Arabic name uthmud, which via athmud and athmoad became Latinised again into antimonium." See A. C. Wooton, *Chronicles of Pharmacy*, 2 vols. (Boston: Macmillan, 1910), I, p. 377. See also Pascal Pilpoul, *La Querelle de L'Antimonie* (Paris, 1928), pp. 15-24; 32-33; 88-89; (Anony.), "Bleeding and antimony in the 17th century," *Boston Med. & Surg. J.* October 1847, *37*: 209-211, Alfred S. Taylor, "On poisoning by tartarized antimony," *Guy's Hospital Reports*, 1857, *3*: 376, Jonathan Pereira, *Elements of the Materia Medica*, 4th ed., 2 vols. (London, 1854), II, p. 858, Homer W. Smith, "Arsenic therapy," *Journal*, American Pharmaceutical Association, June 1922, *11*: 426; Ralph H. Major, *A History of Medicine* 2 vols. (Springfield, Ill.: Thomas, 1954), I, pp. 457-60

Among the antimonials, tartar emetic (antimony and potassium tartrate) stood unrivalled in the eighteenth and nineteenth centuries as a diaphoretic and emetic. Although said to have been discovered by the Dutch chemist Adrian de Mynsicht in 1631, the drug may have been identical with an earlier mixture known in the 1620s as the Earl of Warwick's Powder. Formally introduced into the Pharmacopoeia of the London Royal Society of Physicians under the name Tartarus Emeticus in 1721, its preparations varied in strength and purity — the London, Edinburgh, and Dublin Colleges of Medicine each claiming a superior form of preparation.[3] According to the dose given and the interval between doses, tartar emetic acted as an emetic, diaphoretic, expectorant, sedative, cathartic, and irritant. Believing that the mechanical or "shock" effect brought on by perspiration, nausea, and vomiting would check fevers and other inflammatory diseases if treated at the outset, physicians learned to rely on tartar emetic with a faith bestowed on few other drugs. Powerful vomiting was thought to interrupt the morbid chain of symptoms by removing or preventing the local congestions that constituted the disease. The humoralists administered the emetic to unload the slowly circulating blood in the hepatic vessels and vena porta.[4] Physicians generally varied the dosage to meet the needs of the moment — small doses were given for its diaphoretic or expectorant effects, particularly for colds and catarrhal affections, while larger doses were administered to make a quick impression upon the system and induce vomiting in serious cases of croup, or severe inflammation of the lungs. Although doctors usually administered the drug in pill form or as a powder mixed in syrup, molasses, or thick gruel, they also prescribed an antimonial wine[5] and, as the theory of its modus operandi changed, as antimonial ointment[6] and antimonial plaster.[7] Besides these preparations, tartar emetic was the main ingredient in such nineteenth-century patent medicines as Analeptic Pills, Ayer's Cherry Pectoral, Jayne's Expectorant, Piso's Cure for Consumption, Wistar's Balsam of Wild Cherry, Ransom's Hive Syrup, and Tobia's Derby Condition Powder.[8]

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[2] P O'Connell, "Composition and therapeutical uses of true James's Powder," *Chicago Med. J. & Examiner*, August 1876, *39*: 160-66; R. Hingston Fox, "The use of antimony in ancient and modern medicine," *Clinical J.*, London, May 1917, *46*: 129, James Walker, "An account of an uncommon effect of antimonial wine," *Essays and Observations*, Philosophical Society of Edinburgh, 1756, *2*: 254-56; James Parkinson, *The Chemical Pocket-Book* (Philadelphia, 1802), pp. 91-94; A. Jacobi, "On the oxysulphuret of antimony as an expectorant in inflammatory diseases of the infantile respiratory organs," *New York J. Med* , November 1858, *5*. 356-66.

[3] Robert Chevallier Cream, *Inaugural Dissertation on the Chemical History and Physiological and Therapeutical Action of Tartarized Antimony* (Edinburgh, 1835), pp. 10-11; Jenner, "A process for preparing emetic tartar by recrystalization," *Transactions*, Society for the Improvement of Medical and Chirurgical Knowledge, London, 1793, *1*: 30-33; Taylor, "Poisoning by tartar emetic," 379. The *U S. D.* (1873) gave the following preparation

ANTIMONII ET POTASSII TARTRAS (TARTRATE OF ANTIMONY AND POTASSIUM. TARTAR EMETIC) Take of oxide of antimony, in very fine powder, two troyounces; Bitartrate of potassium, in very fine powder, two troyounces and a half; Distilled water eighteen fluid ounces. To the water, heated to the boiling point in a glass vessel, add the powders, previously mixed, and boil for an hour; then filter the liquid while hot, and set it aside that crystals may form. Lastly, dry the crystals, and keep them in a well-stopped bottle. By further evaporation the mother-water may be made to yield more crystals, which should be purified by a second crystallization.

[4] Cream, *Inaugural Dissertion on the Chemical History and Physiological and Therapeutical Action of Tartarized Antimony*, p. 18.

Like other antimonials, tartar emetic went through alternate phases of popularity and criticism. In the 1780s, for example, there was a flurry of speculation over its possible external application. In experiments carried out in 1785, John Sherwen of London discovered that by rubbing five grains into the palms of his hands a "considerable glow of heat upon the parts" occurred and he soon fell into a deep sleep of several hours, after which he awoke feeling nauseous. When the sickness left, his skin continued to burn and, shortly afterwards, he began to perspire. After this first experiment, Sherwen increased the dose to nine grains and again rubbed the mixture into the palms of his hands. He awoke after a few hours of sleep with a quickened pulse and nausea as well as a peristaltic motion, which was then followed by perspiration. For several days afterwards, he felt an increased flow of urine and a "little tendency to looseness." On the basis of these manifestations, he prescribed tartar emetic for a patient who complained of loss of appetite, pains, chronic weakness, and the "menses flying about her," though he suspected that her illness was due largely to the drying up of an ulcerous inflammation on her leg. He prevailed upon the woman to rub seven grains of tartar emetic into her side and stomach where she most commonly felt pain. After several doses, she experienced profuse sweating and nausea, and her leg began to discharge freely. Pleased with the results, she made a habit of rubbing ten grains of the antimonial into her side and stomach nightly to cure her various ills. With these experiments as his basis, Sherwen suggested that doctors could introduce large quantities of tartar emetic into the system conveniently through external absorption. Particularly when its alterative effects were desired he believed external administration was preferable to oral consumption. Persons who were taking antimony internally for scorbutic, herpetic, and leprous eruptions without success could not find a more effective relief from their chronic affections than in the new manner of absorption. Indeed, physicians could saturate "the juices of the human machine" and so clear the blood of impurities with this most active form of antimony without exciting irritation in the stomach.[9]

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[5] The *U. S. D.* (1873) gave the following preparation:
VINUM ANTIMONII (ANTIMONIAL WINE)
Take tartrate of antimony thirty-two grains; boiling distilled water a fluidounce; sherry wine a sufficient quantity. Dissolve the salt in the distilled water and, while the solution is hot, add sufficient sherry wine to make it measure a pint.

[6] The *U. S D.* (1873) gave the following preparation.
UNGUENTUM ANTIMONII (ANTIMONIAL OINTMENT)
Take of tartrate of antimony and potassium, in very fine powder, one hundred grains, lard four hundred grains. Rub the tartrate of antimony and potassium with the lard, gradually added, until they are thoroughly mixed.

[7] The *U. S. D.* (1873) gave the following preparation·
EMPLASTRUM ANTIMONII (ANTIMONIAL PLASTER)
Take tartrate of antimony and potassium, in fine powder, a troyounce, burgundy pitch four troyounces, melt the pitch by means of a water-bath, and grain; then add the powder, and stir them well together until the mixture thickens on cooling.

[8] A Emil Hiss, *Thesaurus of Proprietary Preparations and Pharmaceutical Specialties* (Chicago, 1898)

Surgeon William Blizard, one of the founders of the London Hospital Medical School, reported in 1787 that doctors in the London Hospital treated surface ulcers with lint moistened with a saturated solution of tartar emetic. In its initial suppurative action, the solution caused not only pain, but a "sordid" and "foul" appearance of the ulcer. After several applications, the antimonial produced a cavity by the "extraordinary action of the absorbent vessels, and not by the destruction of the living solids," and the ulcerous tissues disappeared without sloughing. Blizard recommended this procedure in syphilis and other "topical" complaints. "I have not yet directed my attention to the effects of the solution . . . on the general vascular system," he wrote, "but if it be susceptible of absorption, the external application of tartar emetic may probably prove useful in cases for which it was not internally administered."[10]

Less than a decade later, in the *Memoirs* of the Medical Society of London, surgeon William Gaitskell tested the results of Blizard and Sherwen and concluded that the external application of antimony would "never supercede its introduction by mouth." Rubbing his hand with a solution containing five grains of tartar emetic, he found that the only effect was a "slight sense of heat" in the palms but no nausea, perspiration, vomiting, or other symptoms. He then used ten grains and applied the solution to his hands and arms "without the least sensible effect." Determined to persevere in the experiment, he increased the dose by ten grains every other night until the quantity amounted to two drachms. In addition, he rubbed his hands, arms, legs, thighs, and abdomen until the whole of the solution was disposed of; but regardless of the dose, he was insensible to its effects. Finally he titurated 120 grains of tartar emetic and then mixed it with axonge (hog's lard); the only effect was an irritation to the cutaneous follicles of the skin. From these results, he concluded that tartar emetic so applied, could "never be preferable, or even so advantageous, as the judicious administration of it immediately to the stomach."[11]

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[9] John Sherwen, "Observations on the effects of emetic tartar, by external absorption," *Memoirs*, Medical Society of London, 1789, *2*: 386-93.

[10] William Blizard, "Experiments and observations on the external use of emetic tartar," *London Med J.* 1787, *8*: 57-59.

But the controversy did not end with the remarks of Gaitskell. In the 1799 *Memoirs* of the Medical Society of London, surgeon Benjamin Hutchinson reopened the discussion, being dissatisfied with the "altogether unsuccessful [efforts of his predecessors] in discovering the truth." Gaitskell repeated the experiments on himself and two other persons by rubbing into the palms of their hands five grains of tartar emetic before bedtime. The effects were mixed. It produced only a "gentle diaphoresis" on himself while for one person it caused both diaphoresis and nausea. Repeating the experiment over several nights, all perceived "a *glow* on the body" and one woman remarked that she "had never slept so well in her life as when under the influence of the emetic tartar." Increasing the dosage to one drachm in two ounces of water produced perspiration and "an unusual propensity to sleep." When he increased the quantity to twenty grains, Gaitskell awoke in the night with a full pulse, "great heat," and profuse perspiration which was afterwards followed by "a great and invincible disposition to sleep." With these experiments behind him, Gaitskell then applied the medication successfully to several of his patients suffering from ague and rheumatic pains. Because so large a quantity of the drug could be absorbed into the system through the skin, as opposed to the small amount tolerated by the stomach, he concluded that the powers of the drug were greatly increased. When the blood vessels were "well saturated" with tartar emetic, he believed that doctors could successfully treat sciatica and deep-seated rheumatism. Its specific action on the blood vessels as well as its localized influence on the skin made tartar emetic a particularly useful remedy in those cutaneous eruptions and illnesses which required a diaphoretic.[12]

The founder of preventive inoculation, Edward Jenner (1749-1823), recommended that tartar emetic be used externally as a suppurative and counter-irritant in place of excessive bloodletting, scarification, or blistering agents for mania, chorea, epilepsy, hysteria, and for deep-seated pains and inflammations of the chest. Although venesection reduced the force of the blood acting on the diseased part by diminishing general circulation, counterrritation drew inflammatory action away from a diseased area, where direct remedies could not be applied easily. This was accomplished by creating an artificial or secondary disease on the body's surface which counteracted or withdrew the analogous internal action to a spot where it could be localized and administered directly. It also caused a derivation or "local hyperemia" which brought added amounts of blood to the surface to relieve congestion at the diseased area. Believing in true Boerhaavian fashion that the diverted blood and humors would redistribute at a spot away from the disease, Jenner applied tartar emetic in inflammatory diathesis following moderate bleeding. The application of the ointment, Jenner suggested, was far superior to normal blistering agents such as cantharides, croton oil, mustard, boiling water, or strong liquid ammonia, since it never caused gangrene and always gave relief when it produced an eruption. But tartar emetic accomplished more than just create vesicles. Physicians had at their command an agent that would "at the same time *vesicate* and produce diseased action on the *skin itself by deeply deranging its structure* beneath the surface." This was why it acted so differently from cantharides and other irritants. By mixing a drachm of tartar emetic with an ounce of hog's lard, doctors could produce papular eruptions on the seats of pain or below, and, in the course of absorption, draw the nflammatory disease to the surface. The antimonial ointment transferred the disease from those parts "necessary to life," to the skin where it could be more easily treated with external remedies.[13]

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[11] William Gaitskell, "Observations and experiments on the external absorption of emetic tartar and arsenic," *Memoirs*, Medical Society of London, 1795, *4*: 80-83.

[12] Benjamin Hutchinson, "Experiments on the external use of tartarized antimony," *Memoirs*, Medical Society of London, 1799, *5*: 81-87.

The internal administration of antimony went through a similar history of experimentation and theory. In chronic illnesses, Edinburgh professor William Cullen (1712-1790) used small doses of tartar emetic for its alterative properties, believing that the drug changed "the condition of the blood from a morbid to a sound state, especially to correct or clear the blood from mpurities." Accordingly, he prescribed antimony in doses which would either purge the patient or cause vomiting. Still others used it as a deobstruent, a now defunct term applying to medicines thought to be able to emove obstructions in any part of the body, especially in the lymphatic system. Here, tartar emetic was employed to "dissipate and disperse humors and collections which were obstructing the natural canals and vessels of the body."[14]

> T]hat when a pretty large dose of the essence of antimony is given, as three or four

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[13] Quoted in William Balfour, *Illustrations of the Power of Emetic Tartar, in the Cure of Fever, Inflammaon, and Asthma; and in Preventing Consumption and Apoplexy*. 2nd ed (Edinburgh, 1819), pp. 1-2

[14] Fox, "The use of antimony in ancient and modern medicine," 129-31, Smith, "Arsenic therapy," 426-8; John D. Comrie, *History of Scottish Medicine* (London: Baillière, Tindall & Cox, 1927), pp. 203-205.

> drachms, for instance, a large Sweat almost always succeeds, if it is not immediately thrown up by Vomit. By thus keeping up then, and quickening, the action of the vessels on the contained fluids, the general circulation of the humors is most effectively promoted; and indeed some such a stimulus is very often highly necessary in the ultimate ramifications of the sanguineous, ferous, and lymphatic arteries, where the motion is naturally exceeding slow, and where stagnation, and consequent corruption of the serum and lymph, are very apt to generate a putrid colluvies [filth] . . . . By thus universally stimulating therefore not only the greatest, but also the smallest vessel of the body, this medicine greatly tends to remove all obstructions formed, or forming, even in the minutest canals and hence most successfully promotes the natural secretions in which, duly performed, health itself consists.[15]

Henry Wilkins in his *An Inaugural Dissertation on the Theory and Practice of Medicine* (1793), strongly recommended antimony, used with or without bleeding, in inflammatory fevers "of less magnitude." He administered the antimonial every eight or ten minutes in 1/3 grain doses until the patient began to vomit. Once vomiting occurred, he wrote, the patient normally began to sweat "by which a perfect victory is gained over the fever." In addition, he gave a combination of tartar emetic and ipecac for putrid fever, James's Powder in doses of five or six grains every twenty minutes for remittent fever, a combination of ipecac and antimony for amenorrhoea, the common cold, and influenza, and tartar emetic dissolved in warm water for dysentery. Wilkins also prescribed the emetic properties of antimony for nervous fever, intermittent fevers, quinsy (severe sore throat with choking), gout, scarlet fever, penumonia, apoplexy, palsy, epilepsy, asthma, dyspnoea, whooping cough, hysteria, mania, dropsy, jaundice, hernia humoralis, ulcers, and anorexia (loss of appetite).[16]

In the 1820s and 1830s, physicians in both Europe and America who were influenced by Cullen's contributions to therapeutics, and particularly his criticism of medical restraint in the use of opiates, calomel, antimony, emetics, and purgatives, turned to heroic doses of antimony, asserting that the novel treatment produced neither vomiting nor sweating "but merely a peculiar state of the system which appears to be incompatible with the existence of inflammatory action." When physicians achieved this so-called state of "tolerance" in which the patient could support large quantities of the drug without nausea, they discovered that antimony possessed "the remarkable property of subduing inflammatory action in the internal organs of the body."[17] While this remedial approach was used as early as the 1750s by Marryatt of Bristol, its more general acceptance grew out of medical practices of French and Italian physicians at the beginning of the nineteenth century, especially Giovanni Rasori (1766-1837) and Réné Théophile Laennec (1781-1826).[18] Known as the founder of the contra-stimulant school, Rasori had modified the earlier Brunonian theory (name given to the ideas of John Brown) of sthenic and asthenic diseases by suggesting that diseases were states of either "stimulus" or "contra-stimulus" diathesis. John Brown (1735-1788), an Edinburgh disciple and later rival of Cullen, revived the ancient Methodism of Asclepiades (124 B.C.) by advancing a thesis which attributed disease to the degree of "excitability" of the tissues. Asclepiades' doctrine of constricted or relaxed condition of the body (strictum et laxum) had been transformed by Brown into sthenic (excessive stimulation) and asthenic (deficient stimulation) states, Rasori's theory of "stimulus" and "contra-stimulus," and François Joseph Victor Broussais' theory of irritation. Rasori believed that proper diagnosis of disease could only be ascertained by observing the effects of bloodletting. If the patient's health improved as a result of bloodletting, his condition was diagnosed as a stimulant diathesis and was then corrected with sedatives, opium, and more bloodletting. If, on the other hand, the condition worsened from the venesection, a contra-stimulant diathesis was diagnosed and the patient given heroic doses of gamboge, aconite, ipecac, or nux vomica. Rasori first employed tartar emetic in 1799 in the treatment of epidemic fever victims in Genoa. He prescribed antimony in large doses and "with a view to an *effect on the system* and on the *disease*, entirely *independent of any evacuation whatever*." Rasori gave his patients from twelve to thirty grains of antimony after one or more bleedings, and in several cases, upwards of sixty grains in twenty-four hours, depending on the morbid state of the disease. "The fitness of the living organism to support large doses of the salt *without producing vomiting*, or any other symptom of powerful action on the intestinal tube, belongs only to the *morbid state*," wrote Rasori, "*is limited to this*, and *lasts only so long as this*."[19]

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[15] Peter Shaw, *A Philosophical Analysis of Antimony: Giving a Rational Account of the Nature, Principles, and Properties of that Celebrated Drug* (London, 1747), pp. 72-73.

[16] Henry Wilkins, *An Inaugural Dissertation on the Theory and Practice of Medicine* (Philadelphia, 1793), pp. 1-16.

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[17] Cream, *Inaugural Dissertation on the Chemical History and Physiological and Therapeutical Action of Tartarized Antimony*, p. 25; Alex Berman, "The heroic approch in 19th century therapeutics," *Amer. J Hosp Pharmacy*, September-October 1954, 321-27.

[18] Taylor, "On poisoning by tartarized antimony," 391, Thomas Marryatt, *Treatise on Therapeutics* Bristol, 1758).

[19] Quoted in Taylor, "On poisoning by tartarized antimony," 392, Esmond R Long, *A History of Pathology* (Baltimore: Williams & Wilkins, 1928), pp 122-23, Erwin H. Ackerknecht, *Medicine at the Paris*

Rasori attributed the condition of "tolerance" to what he called the state of diathesis, or, the peculiar morbid state or inflammatory condition of the system which allowed the body "to *support with impunity* . . . the different doses of the medicine."[20] As soon as the condition of tolerance made its effect on the diathesis, the nauseous action of the drug stopped and the contra-stimulant properties took charge. Thus, when tolerance took place, remarked St. Louis physician L. C. Boisliniere in 1856, the patient could readily take forty or fifty grains of tartar emetic daily without purging, vomiting, or perspiring. After the drug was tolerated by the system, it exerted its elective or specific action on the mucous membrane of the lungs and was afterwards carried away by the kidneys.[21] But when tolerance was not established, the patient risked his life with continued treatment of heroic doses. Physicians were warned when applying the Rasorian treatment not to repeat doses if the preceding dose had occasioned ill consequences.[22]

Occasionally, physicians who treated fever patients first with venesection and then with tartar emetic, using the antimonial as a contra-stimulant, found instances when this caused the chest and abdomen to break out in pustular eruptions, which spread to the arms, legs, and then to the genital region.[23] The eruptions, however, were usually interpreted as a sign of the cure. Boisliniere argued that antimony cured pneumonia by producing on the membrane of the lungs "a toxic substitutive action, which is occasionally made manifest even on the skin," through pustular eruptions. Given the fact, according to Boisliniere, that pneumonia often caused pre-existing cutaneous affections to diminish or disappear altogether (acting as a "revulsive" on a specific cutaneous affection), then conversely, why could not antimony's effects on the mucous membrane of the lungs extend also to the skin "by virtue of that continuity of tissues and reciprocity of function?" The eruption of such pustules was proof that the medicine was working its effects on the lungs.[24]

Like the rationalist Benjamin Rush (considered by Europeans as a Bruno-

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Hospital, 1794-1848, (Baltimore: Johns Hopkins Press, 1967), pp. 61-72; 92-96, Fielding H. Garrison, *An Introduction to the History of Medicine*, 4th ed. (Philadelphia. Saunders, 1928), pp. 408-412.

[20] Quoted in Taylor, "On poisoning by tartarized antimony," 394

[21] L. C. Boisliniere, "Pustular eruption of the skin from the internal use of tartar emetic," *St. Louis Med. & Surg. J.*, 1856, *14*. 20-21.

[22] Taylor, "On poisoning by tartarized antimony," 395

[23] John S Wilson, "Specific cutaneous eruption, produced by the internal use of tartar emetic," *Southern Med. & Surg. J.*, June 1852, *8*. 343-45, William Griffith, "Effect of tartar emetic on the genital organs," *Provincial Med. & Surg. J.*, London, 1842, *5*. 127-28.

[24] Boisliniere, "Pustular eruption of the skin from the internal use of tartar emetic," 21, P. M. Kollock, "On the cutaneous eruption induced by the internal use of tartar emetic," *Southern Med. & Surg. J.*, August 1852, *8*. 465-66.

nian although Rush made every effort to deny the implication), Broussais' monistic therapeutics claimed that specific diseases did not exist; rather than reducing all diseases to what Rush took to be the excessive action of the capillaries, however, the French physician claimed that all disease was merely the result of inflammation of a gastro-enteritic origin — a change in the effects of heat on the humors which engendered disease or localized irritation. Broussais (1772-1838) objected to the Brunonian theory of sthenic and asthenic states, especially Brown's contention that most diseases were asthenic, demanding a heroic regimen of stimulants. Believing, on the other hand, that most illnesses were sthenic, demanding sedation, Broussais vehemently opposed the ingestion of most of the articles of the Pharmacopoeia, preferring instead to rely upon bleeding and leeches. Physician N. R. Smithe, editor of the *Philadelphia Monthly Journal of Medicine and Surgery*, who published one of the earliest warnings on the possible abuse of antimony, remarked in 1827 that the medicine did not always act uniformly on the stomach. Sometimes when vomiting did not occur, the muscles, lungs, diaphragm, and other organs became seriously inflamed. But while physicians belonging to the Broussaisian school extended their antipathy of the drug to the point of almost rejecting it from the Pharmacopoeia, preferring instead to employ copious bloodlettings and large numbers of leeches, Smithe could not bring himself to do so. He agreed with Broussais that too many practitioners had used antimony indiscriminately, a situation which on many occasions only aggravated the disease, or subverted the diseased action to the point of establishing a new one. He furthermore had no doubt that "many cases of slight derangement of the alimentary canal had been converted into continued fever by an irritating dose of tartar emetic." He also objected to the use of full doses of antimony in dyspeptic and other chronic affections of the digestive organs, and criticized the fashionable procedure used by American physicians of beginning the treatment of chronic ailments with antimony to remove the "foul stomach," and then following with the Brunonians' favorite agents of laudanum and whiskey. Yet, despite these abuses, Smithe believed that antimony was a necessary agent in controlling inflammatory fevers. In these instances, the drug could be used not only to subdue "preternatural action" through its emetic effects, but could evacuate irritating substances from the system and "effect a derivation of action from some other part, by the impression which it [made] [u]pon the mucous membranes."[25]

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[25] N. R. Smithe, "On the uses and abuses of the tartrate of antimony," *Philadelphia Monthly J. Med. & Surg.*, 1827, *1*. 82-84, John T. Reeves, *On the Medical Theories of Brown, Cullen, Darwin, and Rush* (Philadelphia, 1805), Richard H. Shryock, "The advent of modern medicine in Philadelphia, 1800-1850," *Yale*

Dr. James Kitchen, writing in the *North American Medical and Surgical Journal* of Philadelphia in 1828, likewise could not accept the Broussaisian antipathy for the drug. Although once a student and an admirer of Broussais in France, Kitchen, like other students who had questioned the extremes of his antiphlogistic regime and his monistic theory of gastro-enteritis, soon learned from Laennec's extensive pathological observations of autopsy examinations that there was no evidence of irritation of the mucous surface.[26] While in residence in Paris under the tutorship of Laennec, who not only proved the specificity of certain diseases, but also attracted the attention of the medical world by using a stethoscope in diagnosis, Kitchen converted to the heroic application of antimony. Laennec administered contra-stimulant doses of tartar emetic in various chest diseases without the least nausea or vomiting by first bleeding the patient twenty ounces and then immediately administering one-grain doses of the antimonial in orange flower water every two hours until the system began to tolerate the drug. In the course of a day, the patient thus took six grains of tartar emetic and was allowed to sleep the night unless the case was a violent one. On the following day, Laennec again commenced with the medicine but increased the dosage to 1 1/2 grains or more Thus, when the drug took effect, according to Kitchen, "the remedy acted more like an opiate than an emetic," and the patient became comparatively free from uneasiness and that dreadful anxiety which often accompanied the chest disease.[27] He recalled one man cured under Laennec's care who over a period of a month consumed three hundred and twelve grains of tartar emetic. He also learned that the antimonial worked its remedial effects upon patients suffering from articular rheumatism.

> A patient was admitted about an hour before the regular visit, at 10 o'clock, in the morning. As soon as M. Laennec examined him he ordered tart, antim, gr. 1. every two hours, to be given in the usual way — even before bed time, and consequently after the ingestion of only six grains, according to the report of the house student, he was so much relieved, that he left his bed, and walked up and down the ward several times; the consequence of which was, that, the next morning, he was worse than ever. The antimony was again given, and the same effects followed; in a day or two he was discharged perfectly well. I was never more astonished and better satisfied with the powerful effects of the medicine, and of the certainty of its operation in an

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J. Biology & Med, July 1941, *12* 715-38, Shryock, "Benjamin Rush from the Perspective of the 20th Century," *Transactions*, College of Physicians of Philadelphia, December 1946, *14*. 114-16; Major, *History of Medicine* II, pp. 726-27

[26] James Kitchen "On the administration of tartarized antimony, in large doses, in some of the phlegmasiae," *North Amer. Med. & Surg. J.*, Phila., April 1828, *5*: 303; R.T.H Laennec, *A Treatise on the Disease of the Chest* (New York, 1835; first ed , Paris, 1819).

[27] Kitchen, "On the administration of tartarized antimony, in large doses, in some of the phlegmasiae," 294.

disease, than I was, in this instance, of this preparation . . . . Happy, thrice happy ndeed, would it be for suffering humanity, and most gratifying would it prove to the practitioner of our art, were they allotted, by the bountiful Giver of all good, antidotes to every disease, as sure in their effects, and as quick and permanent in their cure, as this preparation of antimony is to articular rheumatism.[28]

In one of the more elaborate studies on tartar emetic written in the early decades of the nineteenth century, physician William Balfour admonished he medical profession against using antimony for its nauseant effects only. "The greater number of those who are stimulated by the noble ambition of distinguishing themselves as the benefactors of mankind," he observed, "direct their efforts to the discovery of new remedies, instead of instituting experiments with those whose medicinal powers are demonstrated." By experimenting with the older medicines, the profession could discover additional remedial value and avoid the danger of wandering into the unfamiliar ground of newer herbs and metals, and tartar emetic was a perfect example of a drug whose possibilities were yet to be fully explored.[29]

Balfour found himself very much involved in the Asclepiadean medical systems controversy which had raged during the early decades of the nineteenth century as a result of the success of Rush in America and Rasori in Italy. Along with most nineteenth-century practitioners, Balfour recognized the nauseant properties of tartar emetic, but he hoped that its sedative or febrifuge powers in acute inflammatory diseases would become more recognized.[30] Agreeing with the contra-stimulant school of Rasori, Balfour argued that it was possible to subdue febrile action, soothe irritation and preserve the equilibrium of the circulation without inducing nausea and vomiting in the system. Like Rasori too, he was particularly displeased with the Broussaisian practice of heroic bloodletting. It seemed rather odd to him that the practice of rapidly abstracting blood from the body to the point of producing syncope, had a more decided effect upon patients with sthenic inflammations than when blood was abstracted slowly or at different times. "Does not this suggest," he queried, "that neither the quantity of blood in the system, nor the quality, is the cause of the disease?" Why should doctors abstract sixty, one-hundred, or even two-hundred ounces of blood from pneumonia victims when tartar emetic might easily lower arterial ction and resolve the congestion with little danger to the patient?[31] Balfour predicted that when physicians learned the full powers of antimony, they would use it in place of bloodletting and thus save the strength of patients who could not withstand the depleting process.[32] Physicians who relied on the lancet alone to equalize the nervous power of the system carried the patient to the point of collapse, when tartar emetic could subdue the inflammatory action and soothe irritation without producing nausea, debility, or "any sensible effect whatever on the skin."[33] Using the drug over a period of months, practitioners could promote the excretions in a "powerful degree" without injuring the digestion.[34]

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[28] *Ibid.*, 294; Long, *History of Pathology*, pp. 132-34.

[29] Balfour, *Illustrations of the Power of Emetic Tartar* (Lexington, 1823), p. 83

[30] *Ibid.*, pp. 5-6.

[31] *Ibid.*, pp. 8-10.

With this in mind, Balfour recommended tartar emetic for persons predisposed to consumption. Could it not be concluded, a priori, he wrote, "that a medicine possessed of such power, is capable of expelling from phthistical constitutions, that acrimony which facilitates the operation of occasional causes in producing consumption?" Though catarrh was generally a mild disease in people with sound constitutions, it frequently, through recurrence or neglect of health, produced phthisis or pneumonic inflammation; and even occasioned haemoptysis (bleeding from the lungs) and the formation of tubercles in the lungs.[35] "If, therefore, catarrh consists in an afflux of fluids to the mucous membrane of the nose, fauces, and bronchiae, accompanied with inflammatory action of these parts — if this afflux and this action are occasioned by diminished perspiration; and increased by fresh accessions of cold repelling the fluids from the surface — if Emetic Tartar is powerful in equalizing the circulation, in determining to the surface, and in subduing inflammatory irritation; then it must also be considered a powerful preventive of phthisis from catarrh."[36]

> Emetic Tartar possesses, in a degree superior to any other medicine yet known, the very qualities required, both the for prevention and cure of consumption. It subdues inflammation, whether general or local, acute or obscure. It is paregoric and hypnotic, without being narcotic. That is to say, it assuages pain, soothes irritation; and induces sleep, without stupifying the patient. I have before observed, that in those disposed to consumption, there is an acrimony or taint which facilitates the operation of the occasional causes of the disease. This acrimony is increased by the irregularity with which the excretory functions are performed, particularly of the skin. Emetic Tartar promotes all the excretions, especially those of the skin and lungs; and, moreover, prevents congestion in the latter. In one word, there is not a cause of phthisis to which an antidote is not to be found in Emetic Tartar, which, combined

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[32] *Ibid.*, pp. 187-89.

[33] *Ibid.*, pp. 12-13, 46.

[34] *Ibid.*, pp. 186-87.

[35] *Ibid.*, pp. 191-92.

[36] *Ibid.*, pp. 199-201.

with other remedies, and with a bland, but generous, diet, will be found capable, I trust, of restraining, in an important degree, the ravages of that final disease.[37]

Similarly, Balfour recommended the antimonial as a substitute for blood-letting in apoplexy, gout, quinsy, idiopathic fever, hernia humoralis, inflammation of the mammae, in ophthalmia, chronic hepatitis, nephritis, croup, dyspnoea, and asthma. He also encouraged its use as a nauseant for insanity where debility was owing to the "increased tension and fulness of the vessels of the brain." The antimonial put an end to oppression of the brain by restoring the functions and equilibrium of the nervous power. "Yawning, and stretching, and sneezing," he wrote, "are evidently efforts of nature to preserve the balance of the circulation; and the forcible concussion given to the whole body by the action of vomiting must contribute powerfully to the same end." He likewise speculated that had vaccination not been discovered, tartar emetic would have proven a powerful moderating influence in the ravages of smallpox by lessening the violence of the eruptive fever. In addition, he suggested that Europeans traveling in tropical climates would find it expedient to carry tartar emetic with them to alleviate the dangers of tropical fevers.[38] His advice was taken, for a physician in Jamaica in the early decades of the twentieth century referred to tartar emetic as a "sheet anchor" in problems of tropical mania; he administered small doses of the medicine as an antiphlogistic and sedative to subdue the excited imagination of his mania patients. Small doses combined with henbane and digitalis not only calmed the pulse but warded off the paroxysms of convulsive excitement.[39]

Actually, the prescription of antimony in tropical disease was not an unreasonable one. Like its related element arsenic, antimony was found to do good in cases where certain parasites were present in the body.[40] By 1917, physicians were administering intravenous, intramuscular, and subcutaneous injections of oxide of antimony and tartar emetic regularly in tropical diseases, particularly in tryanosomiasis. Although atoxyl and other arsenicals were popular antidotes, the experiments of Nicolle, Mensil, Cushny, Plimmer, and Thompson in 1906 and 1907 demonstrated that antimony had a "sterilizing" effect upon the trypanosomes. Also about the same time, Broden and Rodhain began giving tartar emetic intravenously in the Congo region to natives suffering from sleeping sickness. Subsequent to these developments, and also because of the experiments of Leboeuf, Martin, Darré, and Kerandell, most of the cases of trypanosomiasis that passed through the London School of Tropical Medicine were treated with a combination of atoxyl and intravenous tartar emetic. Antimonial injections were also employed in leishmaniasis in 1913 as well as in cases of ulcerating granuloma, in which, according to the experiences of Terra and Rabello, tartar emetic acted as a specific. Sometimes a combined therapy of antimony and X-rays was prescribed for treating ulcerating granuloma. Physicians also treated cases of kala-azar with intramuscular tartar emetic or antimonyl sodium tartrate. Similarly, injections of tartar emetic, sometimes combined with atoxyl, were employed in Rhodesia and Nyasaland for trypanosomiasis and leishmaniasis. It was even suggested at the time that antimony be tested in cases of malaria and in place of arsphenamine against the spirochaeta (treponema pallida) of syphilis.[41]

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[37] *Ibid.*, pp. 202-203.

[38] *Ibid.*, pp. 206, 211-12, 214-15.

[39] Hugh Croskery, "On the value of tartar emetic in compression of the brain, and in controlling convulsions and maniacal excitements dependent thereon," *Irish J. Med. & Practice*, 1867, *43*: 103.

[40] Fox, "The use of antimony in ancient and modern medicine," 131.

Borrowing from the medical theories of Rasori, Tennessee physician Alexander McCall recommended heroic doses of tartar emetic for pneumonia. Writing in the *American Medical Recorder* in 1823, he reported having given six-grain doses of tartarized antimony in warm water as a substitute for venesection, determining that the advanced stages of pneumonia would not tolerate depletion. When the initial retching was checked in his patient, he prescribed full doses of antimony in the belief that it would work to improve the distribution of fluids in the system. "Diseased actions are often directed into different channels," he wrote, "which, if continuing to act in a concentrated state of any one or two important organs, would soon incapacitate them from giving to, or receiving support from, appending structures." In his judgment, the remedial application of tartar emetic corrected the derangement of gastric and cerebral functions which had left the liver in a "state of torpidity"; consequently the capillary and pulmonary circulation became equalized through the centrifugal distribution of blood. The lungs as well as the whole venous and lymphatic system commenced their respective absorbent duties, and with the secretory functions restored, mental vigor returned.[42]

According to Robert C. Cream in his *Inaugural Dissertation on the Chemical History and Physiological and Therapeutical Action of Tartarized*

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[41] George C. Low, "The history of the use of intravenous injections of tartar emetic in tropical medicine," *Transactions*, Society of Tropical Medicine and Hygiene, 1917, *10:* 37-40; Fox. "The use of antimony in ancient and modern medicine," 131.

[42] Alexander McCall, "Observations on the use of tartar emetic in pneumonia," *Amer. Med. Recorder*, October 1823, *6* 588.

Antimony (1835), there was no drug better fitted for emptying the primae viae than tartar emetic. It not only emptied the stomach thoroughly, he wrote, but continued nausea for some time after its administration, and by depressing the vital powers, enabled the heart and vessels "to recover from the effects of any abnormal distribution of the blood." Cream gave nauseating doses of antimony over a long period in ophthalmia "to lower the living power, and thereby take off the inflammatory action," as an evacuant and diaphoretic in phrenitis, and as an emetic and depressant in quinsy to expel loose mucus in the trachea, equalize the circulation, and prevent any fresh formations.[43] He also administered tartar emetic ointment as a counter-irritant in insanity and in chronic laryngitis. In the latter instance, the ointment was rubbed on the neck and throat in place of local bleeding and blisters. While the patient "suffered extremely," he observed, "a complete and permanent cure was effected." In addition, when there were obstructions of the esophagus, he recommended injections of tartar emetic into the vein. Cream used a combination of venesection and antimony for acute stages of rheumatism, nauseating doses for diaphoretic and contra-stimulant purposes in eruptions of the face, heroic doses for hemiplegia, and emetic doses for dropsy, marcores, and amaurosis.[44]

Physicians in both Britain and the United States used antimony as a substitute for ergot in obstetrics. Evory Kennedy of the Lying-in Hospital in Dublin prescribed tartar emetic in cases where patients suffered from "grinding pains" due to the premature propelling of the child against the os uteri before it sufficiently dilated. While accoucheurs usually resorted to bleeding and warm baths in these instances, Kennedy believed that five- or six-grain doses of nauseating antimonial dissolved in water would produce relaxation of the os uteri. He also recommended nauseating doses of tartar emetic for "irritable" or violent labor where the mother kept changing posture.[45] In addition, he thought tartar emetic along with venesection most efficacious in puerperal convulsions. After copious bleeding, he administered full and continued amounts of the medicine. Were it only for its success in puerperal mania, wrote Kennedy, tartar emetic would be esteemed the most valuable article in the materia medica. "The moment a patient was observed to exhibit any incoherence after delivery, attended, as it usually is, with rapid pulse and wild expression of the eye, he wrote, "she was placed under its nauseating influence, and retained so for twenty-four or thirty-six hours, or longer if necessary." In almost every case the disease yielded, "the real ills produced by the medicine taking the place of the imaginary ones previously occupying her attention." He also recommended tartar emetic for obstructed and inflamed mammae. There was no better drug in his opinion which could so clearly control the tumified, lobulated, and obstructed state of the mammae. The rationale of this treatment was that tartar emetic relieved the ducts and tubes of the breasts "by facilitating the transit and escape of the milk when secreted" without causing too rapid "a determination to the breasts." In effecting this, he gave a "free saline purgation" followed by nauseating doses of antimonial which relaxed the "contractile tissues, thus rendering pervious the lactiferous ducts and tubes." By inducing vomiting at the outset, followed by warm compresses, the breasts were then drawn by a child or a vacuum bottle.[46]

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[43] Cream, *Inaugural Dissertation on the Chemical History and Physiological and Therapeutical Action of Tartarized Antimony*, pp. 20-25.

[44] *Ibid.*, pp 32-40

[45] Evory Kennedy, "Observations on the use of tartar emetic in obstetric practice." *Amer. J Med. Sci*, Phila., 1835, *17*: 293, 301; William Read, "Effect of tartrate of antimony in facilitating labor," *New England J Med*, 1856-57, *55*: 505-506.

C. S. Tripler and G. C. Blackman, in their *Handbook for the Military Surgeon* (1861) prescribed tartar emetic for many forms of camp illnesses — from dysentery to battle wounds. During the Civil War, physicians employed it for severe gunshot wounds, administering eight to twelve grains of antimony in four parts on the half hour until the muscular energy and arterial and nervous excitement abated. Then smaller doses were given at greater intervals to keep up the contra-stimulant action.[47] According to Surgeon-General William A. Hammond, however, the drug had been used too indiscriminately with the result that corrosions and serious lesions had been caused in the intestines.

> But in dysentery the addition of tartar emetic to the other remedies employed, as well as its use alone, may well be regarded with distrust. Its tendency to irritate the gastro-intestinal mucous membrane seems to be clearly established, and even when administered in moderate doses it sometimes unexpectedly gives rise to local inflammatory processes. When small doses are repeated at intervals for some time, or large doses are given, these accidents are still more common. Nothing then could justify the administration of tartar emetic in dysentery or the other fluxes unless it could be shown to exert some favorable influence upon the progress of the disease that cannot be obtained in any other way. But all the effects which we are warranted by evidence in attributing to it may be obtained by other medicaments that are much less likely to aggravate the already existing intestinal lesion. Accordingly the use of antimonials in the fluxes, which during the last half century has been becoming less and less general, has fallen at last into deserved oblivion.[48]

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[46] Kennedy, "Observations on the use of tartar emetic in obstetric practice," 303-305.

[47] C. S. Tripler and G. C. Blackman, *Handbook for the Military Surgeon* (Cincinnati, 1861)

[48] U. S. Surgeon-General's Office, *The Medical and Surgical History of the War of the Rebellion* 3 vols. (Washington, 1870-1888), Part II, vol 1, 691.

The abuse of tartar emetic by northern doctors during the Civil War precipitated the decision by Hammond to strike it — along with calomel — from the army supply table in 1863. Despite this order, some 21,804 ounces were purchased during the war and administered as a substitute for ipecac in cases of dysentery.[49]

The professional and popular idea of poisoning by tartar emetic had been generally limited to the administration of large doses; but in reality, the administration of small doses at intervals was just as efficacious in bringing out the noxious action of the mineral. In tests carried out in 1846, Mayerhofer of Munich experimented with 1/100 grain doses of tartar emetic on his own healthy body. Taking small doses over a period of fifteen days, he soon experienced such feelings as fullness in the forehead, oppression in the region of the heart, irregular pulse, nausea, vomiting, profuse perspiration, pain in the abdomen, loss of appetite, giddiness, constriction of the throat, loss of sight and hearing, coldness, and a choking sensation. Similar studies carried out by Wetzler of Augsburg using one grain every hour for ten hours and Jankowich of Ofen using 1 1/2 grains over eight hours, corroborated the earlier results of Mayerhofer.[50] Normally, in cases of antimonial poisoning, doctors treated patients with laudanum, tea, Jesuit's bark, decoction of galls by the mouth or injection, calomel, friction with flannels wet with warm spirits of turpentine, hot applications to the feet, mucilaginous drinks, leeches applied to the epigastrium, bleeding and sinapisms applied to the spine, abdomen, and extremities.[51]

Some physicians found themselves acting the role of consummate casuists when faced with instances of antimonial poisoning. Dr. Charles Rynd, for example, contributed an account in the *Peninsular and Independent Medical Journal* of 1859 of a woman suffering from exhaustion, rheumatism, and suppression of menstrual discharge, who had been to several doctors without benefit or relief. By mistake, he dosed her with forty grains of tartar emetic in a period of ten hours, during which time she experienced violent vomiting and purging, burning pains in the epigastrium, tenesmus, a "shrivelled condition of the extremities," cramps in the legs, and hiccupping. Although he treated her for antimonial poisoning by administering laudanum, tannic acid, green tea, and mustard sinapism to counteract the poisonous effects, he was pleased to relate that within a week her strength had returned, her rheumatism had gradually gone away, and her menstrual period had reappeared. "I am almost certain," he concluded, "that its use (or abuse, if you please) was attended with beneficial results." He believed that the antimonial had produced a powerful alterative effect on the system which proved decidedly beneficial to her symptoms.[52] There were other poisoning victims who were not so fortunate in their medical treatment. One man seized with a pain in his hip after having fallen into a river, was blistered, salivated with mercury, and dosed with thirty grains of tartar emetic each day for a period of three weeks. After a rapid weight loss from over two hundred pounds to mere skin and bones, the man died — probably in a desperate effort to escape from his physician rather than as an untimely result of his disease.[53]

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[49] P. W. Douglas, "Tartarized antimony in traumatic pneumonitis and pleuritis," *Confederate States Med & Surg J*, Richmond, 1864, *1*: 136-37; John S Haller, Jr., "Samson of the materia medica medical theory in the use and abuse of calomel in 19th century America," *Pharmacy in History*, 1971, *13*. 70-71.

[50] Taylor, "On poisoning by tartarized antimony," 387-92

[51] E W. Duffin, "Case of over-dose of tartar emetic," *Edinburgh Med & Surg J.*, 1823, *19*, 354-58, John T Cleaves, "A case of poisoning by tartar emetic," *Western J Med. & Surg.*, Louisville, 1848, *1* 23-25, Stephen A. McCreery, "Case of accidental poisoning with half an ounce of tartar emetic successfully treated with green tea and tannin," *Amer. J Med Sci* Phila., n.s, 1853, *25*: 131-32

Surely one of the more difficult problems that grew out of the use and abuse of tartar emetic was determining where the medical and therapeutic use of the drug ended and criminal intent began. During the nineteenth century there were numerous court cases involving antimonial poisoning, in both large and small doses. Presenting a case in medico-legal language was almost impossible, given the context of nineteenth-century understanding of poisons and the therapeutic action of drugs on the system. A host of difficulties impeded the detection of crime and the exposure of the culprit. Some physicians argued that the presence of antimony in the dead body proved nothing; it may even have been the result of the lawful administration of antimony many years previously. Others contended that finding the medicine in the liver, heart, or kidneys, did not prove ingestion during life, but only the absorption from the stomach after death. If on the other hand, antimony was found in the contents of the stomach and bowels, doctors argued that it did not prove ingestion immediately before death, simply "that the mucous membrane of the stomach and bowels was an eliminating surface to the liver and kidneys." And as for the presence of antimony in any of these organs, some medical theorists suggested only that antimony had been taken at some time antecedent to death — a time period that would justify its medical as opposed to criminal use. Many nineteenth-century women, for example, purchased tartarized antimony under the name of "quietness powders" which they bought to cure their husband's drinking habits. The fact that antimony had been discovered in the tissues and that none had been prescribed, or that the nature of the victim's illness was such as to have prohibited its use, would be considered unimportant; the death itself, although marked by symptoms that might have been produced by antimony, was usually attributed to natural causes.[54]

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[52] Charley Rynd, "Poisonous symptoms from tartar emetic," *Peninsular & Independent Med. J* 1859-1860, *2* 717-23.

[53] C. W. Le Boutillier, "Death caused by the injudicious use of antimony," *Chicago Med. J. & Examiner,* 1855, *12*: 353-56.

One such case concerned the poisoning of Ann Palmer by her physician husband with small doses of tartarized antimony. Had not evidence in his trial for the murder of John Parsons Cook revealed the well-marked characteristics of death by strychnine, little thought would have been given to the death of Palmer's wife fifteen months earlier, as well as the deaths of his wife's mother, his friend Hadden, and three children, all of whom died under his roof and under his medical superintendence. Palmer, a gambler in life-insurance, had taken out £33,000 in insurance on his wife three months before her death. He also attempted to insure the life of his groom to the extent of £125,000 and his brother for £82,000.[55] Prior to Palmer's conviction for the poisoning of Cook, his defense began seeking medical support in the event that, with acquittal, the prosecution might then accuse Palmer of poisoning his wife. Because of this, and the discovery of large amounts of tartarized antimony in her exhumed body, the defense amassed a large number of medical supporters who claimed that tartar emetic was medically inadmissable as a poison. Had not Rasori, Laennec and others administered large doses of antimony for the treatment of disease? For months the daily papers and medical journals contained letters from physicians and patients testifying to their experiences with the drug, asserting its perfect safety even in heroic doses. The defense made continual references to the French and Italian contra-stimulant schools with their many American supporters. In addition, the defense initiated experiments to test the drug on healthy animals. Had the case gone to trial, the defense was prepared to argue that not only did the animals thrive on the drug, but took to their food with "unabated appetite." Ironically, however, while members of the medical profession were rallying to the support of Palmer's position, he was convicted of the first crime; just prior to his execution, he freely admitted to poisoning his wife with tartar emetic.[56]

Palmer had many criminal imitators. A physician in Paris was convicted and executed for murder by antimony poisoning and there was also the notorious Wainwright who, like Palmer, speculated in life insurance and tartar emetic. In the McMullen case of 1857, a verdict of wilful murder was found by a jury in the death of a man poisoned by his wife. An observant servant found her mistress slipping tartar emetic into her husband's food.[57] The Vosburg case in the 1870s involved the efforts of a popular and respected preacher in Jersey City to poison his "rustic" and "uncongenial" wife who no longer satisfied either his virility or his social aspirations.[58]

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[54] Taylor, "On poisoning by tartarized antimony," 373-75

[55] *Ibid*., p. 372

[56] *Ibid.*, p. 370.

It would be difficult to find a case more worthy of detailed study than the Wharton trial of the 1870s. Here, the jurist, toxicologist, physician, and lawyer found themselves in one of the more difficult medico-legal problems of the day. On Saturday, June 24, 1871, General W. S. Ketchum, after spending the day in Washington, D. C., on business, traveled to Baltimore with the intention of collecting a debt owed him by a Mrs. Wharton. He reached her home that evening and died there the following Wednesday, June 28. The circumstances of his death led the attending physician to perform an autopsy, and based on the findings of tartar emetic in his stomach, Mrs. Wharton was arrested for his murder on July 10, as she was preparing to leave for Europe. Her trial began in December and the focus of the medical evidence presented led to an academic feud between doctors and chemists of the University of Maryland and those at the University of Pennsylvania over the effects of tartar emetic.[59] What began as a "simple instance of disagreement between experts upon a difficult and obscure subject" soon degenerated into pettiness, name-calling, and serious questions of professionalism.[60] Mrs. Wharton went free largely because the burden of proof was not sustained by state witnesses, and the confusion over the action of tartar emetic was so overwhelming as to make the jury decide on a verdict of not guilty. The question of "reasonable doubt" was never more clearly presented. The Wharton case, as well as other cases involving the possible criminal use of antimony, served to warn the medical community of its responsibility in preparing thorough and irrefutable testimony in future medico-legal trials.

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[57] J Birkbeck, "On slow poisoning by antimony," *Liverpool Medico-Chirurg. J*, 1857, *1*: 36-53

[58] Charles A. Doremus, "Two remarkable cases of chronic antimonial poisoning," *Medico-Legal J.*, 1895-1896, *13*. 166-81.

[59] See J. T Morse, Jr., "The Wharton trial," *Amer Law Review*, 1872, *6*: 647-68; S. C. Chew, "An examination of the medical evidence in the trial of Mrs E. G. Wharton," *Med. Record*, New York, 1873, *8*: 332-38, John J Reese, "A review of the recent trial of Mrs Elizabeth G. Wharton on the charge of poisoning General W. S. Ketchum," *Amer J. Med Sci*, Phila., April 1872, *63*: 330, William E. A. Aiken, "On some supposed fallacies in determining the presence of tartar emetic," *Richmond & Louisville Med. J.*, Louisville, January 1873, *15*. 7-13; P. C. Williams, "A Correct statement of the chemical and pharmaceutical facts developed during the trials of Mrs Wharton for the alleged murder of General Ketchum and Mr. Van Ness; with a complete exposure of the inaccuracies, indecencies, and unworthy devices of the so-called experts, Drs H. C Wood, and J. J. Reese, obtained from Philadelphia," *Richmond & Louisville Med J.*, Louisville, June 1873, *15*. 721-47.

[60] Morse, "The Wharton trial," 667

Over the course of nearly three centuries, tartarized antimony ranked as one of the foremost drugs among the therapeutic disciples of Cullen, Brown, Rasori, and Laennec. It earned a place among with opium and calomel as one of the three most widely prescribed drugs in the materia medica; and, like its sister drugs, it also received the opprobrium of the medical profession in the late nineteenth century when its effects became better understood in the light of increasing criminal abuse and newer medical and chemical experimentation. The use of tartar emetic marks an important episode in the history of medicine and pharmacy in that one can easily observe from the nature of its application the variety of therapeutic theories employed to explain disease and fight its effects.

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE
REPORT OF THE FORTY-SEVENTH ANNUAL MEETING

Charleston, South Carolina
May 1-4, 1974

The Forty-seventh Annual Meeting of the American Association for the History of Medicine took place in Charleston, S.C., May 1-4, 1974. Sessions were held at the Francis Marion, the headquarters hotel, and at the Medical University of South Carolina.

This report, which includes the program and abstracts of the minutes of the Council and Business Meetings, has been prepared by the Secretary-Treasurer, Dr. Genevieve Miller, and is presented for the information of the members. The official minutes and full financial report are preserved in the Secretary's office where they may be examined by any member upon request.

PROGRAM

Wednesday, May 1

8:00 p.m. Council Meeting

Thursday, May 2

9:00 a.m. Opening Session

Donald G. Bates, *presiding*

Welcome from the Dean of the College of Medicine, Medical University of South Carolina

Joseph F. A. McManus

The First Neurologist

Maurice H. Charlton, Rochester, N.Y.

William Westmacott's Memorabilia: The Education of a Left Wing Puritan Country Physician

Peter Krivatsy, Bethesda, Md.

Medicine and Imperialism in China. 1900-1941

John Z. Bowers, New York, N.Y.

11:00 a.m. General Session

Charles E. Rosenberg, *presiding*

Acupuncture and Western Medicine

Jacques Quen, New York, N.Y.

"Christian Physiology": William Alcott's Prescription for the Millenium

James C. Whorton, Seattle, Wash.

The Honorable Antecedents of the "Goat Gland" Fraud

Thomas G. Benedek, Pittsburgh, Pa.

2:00 p.m. General Session

Guenter B. Risse, *presiding*

Sack-'Em Up, Virginia Style

James O. Breeden, Dallas, Tex.

*Anticontagionism in the Opposition to Lister**

Luis H. Toledo-Pereyra, Minneapolis, Minn.

Animal Experimentation and Human Surgery

George Rosen, New Haven, Conn.

4:00 p.m. The Fielding H. Garrison Lecture

John B. Blake, *presiding*

Blinders of the Mind: Historical Reflections on Functional Impairment of Vision

Ilza Veith, San Francisco, Calif.

6:00 p.m. Cocktail Party given by the College of Dental Medicine, MUSC. Blacklock House, College of Charleston, 18 Bull St.

8:00 p.m. Films

Ambroise Paré, Military Surgeon

Thomas R. Forbes, New Haven, Conn.

Leaders in American Medicine — Dr. George W. Corner (AOA Film Series)

John Z. Bowers, New York, N.Y.

Friday, May 3

9:00 a.m. General Session

Dora B. Weiner, *presiding*

"Measure of Civilization": The Hospital Thought of Jacques Tenon on the Eve of the French Revolution

Louis S. Greenbaum, Amherst, Mass.

The Paris Health Council, 1802-1848

Ann LaBerge, Knoxville, Tenn.

Physicians in pre-Revolutionary Russia: Professionals or Servants of the State?

Nancy Frieden, Bronx, N.Y.

American Images of European Socialized Medicine, 1900-1925.

Ronald L. Numbers, Madison, Wis.

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* Not presented.

11:00 a.m. Panel Discussion
J. Harvey Young, *presiding*
Funding Sources for Research and Training in the History of Life Sciences
Ernest Allen, *National Library of Medicine*
John Z. Bowers, *Josiah Macy, Jr. Foundation*
George W. Corner, *American Philosophical Society*
Richard Hedrich, *National Endowment for the Humanities*

2:00 p.m. General Session, Medical University of South Carolina
William Coleman, *presiding*
The Charleston Physician Naturalists
George Gifford, Cambridge, Mass.
Efforts Toward Medical Organization and Control in Florida, 1821-1860
E. Ashby Hammond, Gainesville, Fla.
Mental Health Care of Blacks in Antebellum Virginia
Todd L. Savitt, Charlottesville, Va.
General Session
R. Palmer Howard, *presiding*
Some Black Abolitionist Physicians and Healers in 19th Century U.S.A.
Leslie A. Falk and Sylvester Walker, Nashville, Tenn.
Agency Physicians to the Southern Plains Indians, 1868-1900
Virginia R. Allen, Oklahoma City, Okla.
The Origin, Use, and Importance of Domestic Medical Guides
Eugene H. Conner, Louisville, Ky.

6:30 p.m. Cocktails

7:30 p.m. Annual Banquet, Colonial Room, Francis Marion Hotel
Presidential Address
Lester S. King, *presiding*
The Compleat Housewife
John B. Blake, Washington, D.C.

Saturday, May 4

9:00 a.m. General Session
John Duffy, *presiding*
Phthisis and Puberty: Sex Differences in the Incidence of Consumption Among 19th Century Adolescents
David C. Osler and Barbara G. Rosenkrantz, Cambridge, Mass.
Social Policy and City Politics, Tuberculosis Reporting in New York City, 1889-1900
Daniel M. Fox, Stony Brook, N.Y.
The Anti-Tuberculosis Movement and the Race Question, 1890-1950
Marion M. Torchia, Washington, D.C.

Medical Aspects of the Continental Army's Canadian Campaign of 1775-1776
Philip Cash, Boston, Mass.
The Quest for a National Health Department During the Administrations of Presidents Roosevelt and Taft
Manfred J. Waserman, Bethesda, Md.

12:00 Noon Business Meeting
John B. Blake, *presiding*

Program Committee: Edward C. Atwater, William Coleman, Joseph I. Waring, Dora B. Weiner, James Harvey Young, Gert H. Brieger, *Chairman.*

Local Arrangements Committee: Leon Banov, Jr., J. Hampton Hoch, S. Edward Izard, William H. Prioleau, John J. Sharry, Joseph I. Waring, *Chairman*

EXCERPTS FROM THE MINUTES OF THE ANNUAL MEETING OF THE COUNCIL

May 1, 1974

The annual meeting of the Council of the American Association for the History of Medicine, Inc. was called to order at the Francis Marion Hotel, Charleston, South Carolina, at 8:10 p.m. on May 1, 1974. President John B. Blake served as Chairman, and Genevieve Miller as Secretary. The following Council members were present: Whitfield J. Bell, Jr., Lester S. King, Eric T. Carlson, James H. Cassedy, G. E. Erikson, Chester R. Burns, Martha Teach Gnudi, Stanley W. Jackson, G.S.T. Cavanagh, Johanna Grimes, and Gordon W. Jones. Absent were Jane M. Oppenheimer, William C. Gibson, and Jerry Stannard.

The Council approved the award of the William H. Welch Medal to Walter Pagel, as recommended by the Welch Medal Committee, with the citation "that the award be conferred on Walter Pagel for his extensive and most valuable publications concerning early biology and medicine which have not only decisively contributed to the understanding of these subjects but also raised broader philosophical issues for both science and medicine." The award was reported to Dr. Pagel on April 17, and he replied with the following comments:

"Your letter of the 17th arrived here yesterday morning. What a delightful surprise! The honour is as extraordinary in magnitude and weight as it is undeserved and therefore quite unexpected. I cannot deny, however, that it has refreshed and encouraged Magda and myself — as we are physically conditioned at present — immensely. We are deeply grateful and wish you would convey and express our gratitude and appreciation to the William H. Welch Medal Committee of the Association. It brings back the great days when our beloved old friend and master Henry Sigerist revitalised and re-founded Medical History. No words can do justice to him and his ever-present and enduring spirit. I was fortunate in being allowed to assist him and to sit at his feet in 1930 — an unforgettable summer so full of inspiration and *insignis doctrina* of which he gave us freely and from the depth of a warm and generous heart. Ever since I had the privilege to remain in touch with him — by correspondence and when he visited us in London."

The Council also approved the award of the William Osler Medal and $200 prize to David B. Lovejoy, Jr., a student at the University of Rochester School of Medicine, for his essay "The Hospital and Society: The Growth of Hospitals in Rochester, N.Y. in the Nineteenth Century." Honorable Mention was given to Helen Zia, Tufts University School of Medicine, for her essay "The Development of the Health Delivery System in the Peoples' Republic of China" and to Amy Pruitt, Harvard University Medical School, for the essay "Physicians in an Interdisciplinary Debate: Studies of Aphasia in the 19th Century." This year sixteen essays were submitted, the largest number ever. Mr. Lovejoy was in Charleston to attend the meeting and receive the award.

During the year the Council also approved a joint A.A.H.M. and American Historical Society session at the annual meeting of the latter in Chicago in December 1974 as proposed by Ann Beck. Bearing the title "The City in the Nineteenth Century: Some Problems and Aspects" and having as participants George Rosen, Charles Rosenberg, and Gert Brieger, the session will discuss public health aspects of European and American cities, particularly New York and Philadelphia. Other Council action included the admission to membership of the George W. Corner History of Medicine Society of Rochester, N.Y. and the recommendation of applicants to the International Society of the History of Medicine.

Dr. Miller presented the Financial Report for the Fiscal Year 1972/73, ending 31 October 1973. Commenting on the steady increase in membership, Dr. Miller noted that 96 new active members, 5 new non-resident members and 2 new constituent societies had joined, resulting in a net gain of 27 members after resignations, cancellations and deceased members were subtracted.

Dr. Blake read a letter from the Johns Hopkins Press as well as an amendment to the Agreement between the A.A.H.M. and the Press proposing an increase in the cost of A.A.H.M. members' subscriptions to the *Bulletin of the History of Medicine* from $10 to $13 per year. He pointed out that this is a reasonable request, being a relatively modest price for a journal, and he asked for Council approval. The Council voted unanimously in favor of the increase.

The Treasurer presented the proposed budget for 1974/75. Because of the increased cost of the *Bulletin*, only an $18 dues structure would permit the Association to budget approximately $1500 annually for a Publication Fund, a measure that was suggested to the Council last year. The President and Secretary-Treasurer recommended that the following new dues schedule be presented to the membership for adoption: Active and

Non-resident Members $18, Family Members $25, Constituent Societies $25, Student Members $7.50, Contributing Members or Contributing Constituent Societies $50, Sustaining Members or Sustaining Constituent Societies $100. The Council voted unanimously to recommend the increased dues structure and approved the proposed budget.

The President reminded the Council of the proposal for Life Membership made by Dr. A. B. Schneider at the last Annual Business Meeting. After considerable discussion in the Council, Dr. Burns made a motion to recommend to the members the establishment of a Life Membership at the rate of $1000, the principal to be placed in the Endowment Funds. The annual earnings which remained after the annual dues were paid were to be used for the support of scholarly activities in the history of medicine. The motion carried by a vote of 7 to 3.

The report of the Editorial Committee which had been circulated to Council members in March was discussed in detail (report follows Minutes of Annual Meeting). Expressing confidence in the *Bulletin of the History of Medicine* and the Editor's eagerness to publish Supplements in the form of short monographs of between 90 to 150 pages, the Council approved the report of the Editorial Committee and voted unanimously to recommend to the membership that an amount not to exceed $4000 be appropriated from the General Fund to subsidize a Supplement, following the procedure of manuscript selection outlined in Section 3 of the Committee report.

The President announced the future meetings of the Association in Philadelphia, 1975, Galveston, Texas, 1976, Madison, Wisconsin, 1977. He read an invitation from Dr. Robert P. Hudson to hold the 1978 meeting at the University of Kansas Medical Center. The invitation was unanimously accepted by the Council.

Dr. Miller announced that 132 members of the Association are now members of the nternational Society of the History of Medicine, for which she collected dues of American members for the current year. Since she could not attend the April 27 meeting of the Permanent International Committee in Paris as the U.S. Delegate, the President appointed William H. Helfand, who resides in Paris, as the U.S. Delegate pro tem.

A proposed revision of Article IX of the Bylaws of the Association, which concerns relations with the International Society of the History of Medicine, was presented. The evision was precipitated by the formation of a Canadian Society of the History of Medicine which has been recognized by the International Society, and by the necessity o bring the Association's Bylaws into conformity with some provisions of the Statutes of the International Society. The Council approved the amendment for recommendation to the membership.

The Council meeting adjourned at 10:30 p.m.

Genevieve Miller

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, INC.

BUDGET 1974/1975

Receipts	Dues $18
Membership dues (925)	16,650
Sale of address list	200
Annual Meeting	4,000
Interest on Savings	500
	21,350
Expenditures	
Subscriptions to *Bulletin of the History of Medicine* (925)	12,025
Administration	1,750
Printing and Mailing "Works in Progress"	500
Annual Meeting	4,000
Honors and Awards	
Garrison Lecture Honorarium	500
Garrison Lecture Travel	500
Osler Medal Prize	200
Osler Medal Travel	200
Welch Medal	50
Committee expenses, costs of medals, etc.	150
Publication Fund	1,475
	21,350

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE EDITORIAL COMMITTEE

Report — December 1973

As reconstituted at the spring 1973 meeting of the Association, the Editorial Committee was requested to consider the possible expansion of the publications program of the Association and to suggest new forms of publication which might be supported along with the *Bulletin of the History of Medicine*. The Committee has discussed these matters and offers the following conclusions:

1. The Committee believes that the present annual amount budgeted for additional publication support — i.e $1500 — should not be parcelled out in small portions. Rather, it should be allocated to single substantial projects. Since most publications would in any case require considerably more than this amount, awards need not be made in any given year but might well wait for an accumulation of two or three years of budgeted funds.
2. The Committee believes that the type of publication most needing and meriting further support at this time is the short monograph, of between approximately 90-150 pages.

3. The Committee recommends accordingly that the Association support the periodic publication of short monographs, preferably as supplements to the *Bulletin of the History of Medicine*. We suggest that manuscripts be reviewed by the Editorial Committee as well as by the Editor of the *Bulletin* prior to awarding funds for any Supplement though, once selected, control over the manuscripts would, of course, be exercised by the Editor of the *Bulletin*.

Because of publication delays which the *Bulletin* has experienced in recent months and because the effects of its change-over to a new printer are not yet known, the Committee recommends deferring any decision on such an award until during or after the May 1974 meeting of the Association. However, we urge that an award be made as soon thereafter as possible; if the Association again budgets $1500 or more, that would make possible an award of at least $3,000 in 1974-75.

4. In the event that circumstances make awards for the support of *Bulletin* Supplements impracticable, the Committee suggests making direct publication subsidies or grants to authors with deserving manuscripts. Such an eventuality would require issuance of necessary publicity and the establishment of careful evaluation procedures. Awards should be made contingent upon eventual acceptance by a reliable publisher, such as a university press.

5. In the course of its deliberations, the Committee considered and rejected support for two other types of publications. One was to subsidize a special issue of the *Bulletin* in order to help reduce that journal's backlog of manuscripts; while this proposal has some merit, the fact that there are alternative outlets for such manuscripts helped give it a lower priority than publication of monographs. Another was to fund the publication of full transactions (including all papers) of annual meetings of the Association; we oppose this since we believe the present reporting and publication provision are adequate and since such a blanket arrangement would only "immortalize the mistakes that the program committee has made."

6. The Committtee recommends establishment of a research and publication fund to be used primarily, as its assets accumulate, to augment the budgeted funds of the Association for *Bulletin* Supplements or similar publications. We urge prospective donors who wish to honor deceased members to do so by adding to this fund. We suggest that such donations be suitably acknowledged in any specific publications supported by them, but we do not favor naming the publication fund (or the *Bulletin* supplements, etc.) after any individual, with a possible exception being if a substantial permanent endowment were created.

Thomas G. Benedek
Lelland J. Rather
James H. Cassedy, *Chairman*

December 26, 1973

EXCERPTS FROM THE MINUTES OF THE ANNUAL BUSINESS MEETING

May 4, 1974

The annual Business Meeting of the American Association for the History of Medicine, Inc. was called to order in the Francis Marion Hotel, Charleston, South Carolina, at noon on May 4, 1974 by the President, Dr. John B. Blake, a quorum being present. Dr. Genevieve Miller served as secretary.

After the approval of the minutes of the previous meeting, Dr. Miller read the names of members who had died since last May and the members stood for a moment of silence. The deceased were:

Miss Virginia Burrell, Santa Barbara, Calif.
Charles A. Culotta, Ph.D., Bryn Mawr, Pa.
George E. Morrissey, M.D., Davenport, Iowa
Leo Rosenberg, M.D., Dayton, Ohio

The Secretary-Treasurer presented a summary of the Financial Report for the Fiscal Year 1972/73. Dr. Gordon W. Jones reported that he and Dr. Eric T. Carlson had audited the books and found them in order. The reports of the Treasurer and the Auditors were accepted and approved.

Dr. Blake read a letter from the Johns Hopkins University Press which requested a change in the Agreement between the Association and the Press so that the cost of members' subscriptions to the *Bulletin of the History of Medicine* could be raised from $10 to $13. He indicated that the Council recommended approval of the new rate because of inflation and the realities of the publishing business. Dr. James Harvey Young moved that the amendment to the Agreement be approved. A report from the Editor of the *Bulletin of the History of Medicine* is appended.

Noting that the new *Bulletin* costs necessitate an increase of Association dues, Dr. Blake reported the recommendation of the Council for the following dues structure:

Active and Non-Resident Members	$18.00
Family Members	25.00
Student Members	7.50
Constituent Societies	25.00
Contributing Members or Contributing Constituent Soc.	50.00
Sustaining Members or Sustaining Constituent Soc.	100.00

The new dues structure was approved unanimously, as was the proposed budget for 1974/1975.

The President read the report of the Editorial Committee which was approved unanimously. Following the recommendation of the Committee to subsidize Supplements to the *Bulletin*, Dr. Blake reported the Council recommendation of an appropriation of an amount not to exceed $4000 from the General Fund to be placed into the Publication Fund which was established by the Association in 1973. Dr. Lester King moved that such an appropriation be made, and the motion carried unanimously. During the discussion the suggestion was made that such a fund might be used to reissue Supplements now out of print as well as to subsidize new ones.

Dr. Blake announced that the Council recommends an amendment to the Bylaws to bring *Article IX: Relations with the International Society* into conformity with the current situation. When the Bylaws were originally written, the American Association was the United States and Canadian section of the International Society of the History of Medicine. Last year a Canadian Society of the History of Medicine was created and recognized by the International Society. Other proposed changes bring our Bylaws into conformity with the Statutes of the International Society. The proposed change is as follows:

The present Article IX should be deleted and the following substituted:

"ARTICLE IX: RELATIONS WITH THE INTERNATIONAL SOCIETY

"*Section 1:* The Association will maintain close liaison and cooperate with the International Society of the History of Medicine as the United States of America section thereof.

"*Section 2:* Members of the Association who wish to join the International Society should apply to the President of the Association who, with the approval of the Council, will act upon recommending them for election to membership by the Administrative Council of the International Society. Applicants should include information about their medico-historical activities and publications which will be transmitted to the Secretary General of the International Society.

"*Section 3:* In every odd year at the time of the annual meeting of the Council the President shall appoint, subject to confirmation by the Council, the national delegate and an alternate national delegate for the United States to the International Society, to serve for the ensuing two years or until their successors are qualified. The delegate and the alternate delegate must be citizens of the United States, Active Members of the Association, and also members of the International Society. The President shall forward their names to the Secretary General of the International Society.

"*Section 4:* In conformity with the regulations of the International Society, the national delegate shall be a member of its Permanent Committee. He shall keep the President and the Secretary General of the International Society informed about medico-historical activities in the United States. He shall attend the meetings of the Permanent Committee and represent the Association at International Congresses. He shall function as the intermediary between the International Society and its members in the United States.

"*Section 5:* In case both the delegate and the alternate delegate are unable to attend the annual meeting of the Permanent Committee and the International Congress, the President may appoint a delegate for the occasion.

"*Section 6:* The Secretary-Treasurer of the Association shall collect the annual dues for Association members of the International Society and transmit them to the Treasurer of the International Society."

The motion to adopt the new Section IX was seconded and passed unanimously.

Dr. Miller announced the 24th International Congress of the History of Medicine in Budapest from August 25-31, 1974. She also described the group flight to Budapest and post-Congress tour to Prague, Carlsbad, Dresden, Weimar, and Bad Nauheim which is being arranged by Lufthansa.

Dr. Blake reported the recommendation of the Council to establish Life Memberships of $1000, noting that this requires a change in the Bylaws and that therefore action cannot be taken at this meeting. He stated that if the membership considered this advisable, he would instruct the Secretary to prepare a revision of the Bylaws for the next annual meeting. The motion in favor of Life Membership carried unanimously.

Dr. Blake announced the sites of the Annual Meetings through the year 1978:

1975 May 1-3 Philadelphia, Pa., Dr. Lawrence C. Parish, Local Chairman
1976 May 12-15 Galveston, Texas, Dr. Chester R. Burns, Local Chairman
1977 Madison, Wisconsin, Dr. Guenter B. Risse, Local Chairman
1978 Kansas City, Kansas, Dr. Robert P. Hudson, Local Chairman

Dr. Miller summarized the reports of ten Constituent Societies which she had received, noting the high degree of activity of the local medico-historical groups, many of which meet as often as eight or nine times a year. The very large Mayo Foundation History of Medicine Society (320 members) established an annual award of $100 for an original medico-historical essay written by a participant in an educational program of the Mayo Foundation. The Handerson Medical History Society in Cleveland celebrated the 20th anniversary of its founding.

The following new officers proposed by the Nominating Committee were elected unanimously and applauded:

President (2 year term)	Lester S. King, Chicago, Ill.
Vice-President (2 year term)	John Duffy, College Park, Md.
Members of Council (3 year term)	George E. Gifford, Jr., Boston, Mass.
	Charles Rosenberg, Philadelphia, Pa.
	Ilza Veith, San Francisco, Calif.
	Dora B. Weiner, Purchase, N.Y.

Dr. James H. Cassedy commented on the splendid hospitality of our Charleston hosts, in particular Dr. Joseph I. Waring and his committee. The motion to extend warm thanks was approved with acclamation.

Dr. Saul Jarcho extended congratulations and thanks to the outgoing officers of the Association: Dr. John B. Blake, President, and Council members Eric T. Carlson, James H. Cassedy, G. E. Erikson, and Jane M. Oppenheimer. He complimented them on the faithful and efficient discharge of their duties. Applause.

The meeting adjourned at 12:30 p.m.

Genevieve Miller
Secretary-Treasurer

BULLETIN OF THE HISTORY OF MEDICINE

Volume XLVII of the *Bulletin of the History of Medicine* for 1973 comprised 646 pages of text, an increase of 36 pages over the preceding volume. Of 459 pages devoted to original articles, 225 contained papers presented at the American Association for the History of Medicine's annual meetings. In addition, reports of the annual meetings of 1972 and 1973 accounted for 32 pages. Publication of the papers stemming from the 45th annual meeting was completed and publication begun of papers from the 46th meeting.

During the year the *Bulletin* was obliged to change printers. This change was unexpected and consequently was accompanied by many delays and numerous complications including difficulties in getting paper and in determining the type setting method most suitable for the *Bulletin*.

Several changes seemed appropriate. As already announced, beginning with volume 48, the *Bulletin* will be issued as a quarterly, thus conforming to the practice of most scholarly journals. It is expected that this change will facilitate the scheduling of issues and may help in coping with rising costs of production. There will be no decrease in the number of pages issued in a volume; on the contrary, it will probably be possible to print more pages.

Our difficulties in securing paper have been aggravated by the fact that the *Bulletin* page size is not standard. We have therefore accepted the advice of the Johns Hopkins Press and the printer to adopt a 6×9 page. The margins will thereby be decreased, but not the amount of text on the page.

Invitations to join the *Bulletin's* Advisory Editorial Board have been accepted by Dr. John B. Blake and Dr. Peter H. Niebyl.

The Editors

NEW LIGHT ON THE "SILVESTER" FAMILY OF ANATOMICAL BROADSHEETS

L. H. WELLS

Dr. Elly Cockx-Indestege of the Royal Library, Brussels, has recently (1971) put on record a very fine pair of anatomical broadsheets with French text printed at Antwerp by Silvester van Parijs (Sylvestre de Paris) in the middle years of the sixteenth century.[1] These sheets came to light in the University Library, Mons, bound into a volume containing four Latin medical treatises printed at Paris between 1542 and 1548; these appear to have been brought together by the Belgian scholar Levinus van der Piet, who died as professor at Douai in 1580.

As Dr. Cockx-Indestege points out, the figures on these sheets appear identical, so far as comparison is possible, with those on a pair of sheets with Flemish-Netherlandish text also printed by Silvester van Parijs, represented by sadly incomplete examples in the U.S. National Library of Medicine.[2] It is therefore probable that they are also identical with the two figures on one sheet with Latin text, printed by Silvester, which were known to Choulant[3] but have not been seen in recent years. Closely similar figures also appear on an anonymous and unlocated bilingual Latin-German pair in the University of Michigan Medical Center Library.[4]

The new examples enlarge our knowledge of this family of sheets not only by adding a further language to Silvester's output, but also because they possess all their component parts. Dr. Cockx-Indestege's excellent illustrations of the internal anatomy of the two figures reveal a number of noteworthy details. The lungs are represented as though continuous across the mid-line. In the male figure the heart is shown placed or displaced to the left side, exposing the esophagus in the mid-line above the diaphragm; its base is concealed by the lung. In the female figure the heart was first represented on both sides and then was erroneously hatched out on the left instead of the right side. The urogenital systems of both sexes are clearly copied from the figures of the Vesalian Tabula I; a foetus in conventional pose has been drawn on the body of the uterus. In the female a flask-shaped bladder not included in the Vesalian figure has been added; Dr. Cockx-Indestege informs me that this organ and the slender ureters by which it is suspended form a separate flap attached in front of that depicting the other urogenital organs. The large intestine is depicted in reverse with the caecum and ascending colon to the left and the sigmo-rectal junction to the right. A more detailed comparison of the internal anatomy of these figures with that of the University of Michigan set, as well as with examples of other families of sheets, may well prove very rewarding.

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[1] Elly Cockx-Indestege, "Twee anatomische planodrukken met beweegbare onderdelen, uitegeven bij Silvester van Parijs te Antwerpen (*ca.* 1540-1550) " *Scientiarum Historia*, 1971, *13* 92-102

[2] L. H Wells, "The 'Sabio' and 'Sylvester' families of anatomical fugitive sheets: note on a pair of sheets in the National Library of Medicine," *Bull. Hist. Med* , 1966, *40*: 467-475.

[3] L Choulant, *History and Bibliography of Anatomic Illustration*, trans. and ed M Frank (Chicago: University of Chicago Press, 1920), pp. 161-162

[4] L. H. Wells, "A remarkable pair of anatomical fugitive sheets in the Medical Center Library, University of Michigan," *Bull. Hist Med* , 1964, *38*: 470-476

The French text appears to be substantially identical with the Flemish so far as that is preserved, the text accompanying the male figure being an abridgement of the Latin *Viva delineatio* text, and that accompanying the female a translation of the German *Anathomia* text of 1538;[5] it is quite independent of the French text to the sheets printed by Jean Ruelle at Paris *ca.* 1540-1545[6] and apparently also of the German abridgement (*Lebhafftige Abmahlung*) of the *Viva delineatio* text on the University of Michigan sheets. The text of the Latin "Silvester" sheet appears, from Choulant's indications, to have been the *Viva delineatio* text as it appears on the University of Michigan sheets and on the "Sabio" (Venice) issue of 1539.

Dr. Cockx-Indestege has found that the watermark of the new "Silvester" sheets conforms to a type current between 1525 and 1555 and particularly *ca.* 1540-45. The inclusion of details copied from the Vesalian Tabulae indicates that these sheets cannot be earlier than 1538. If as I suspect the anonymous Michigan sheets preceded those bearing Silvester's name, these last are more likely to have appeared after 1540 than before. Dr. Cockx-Indestege's dating *ca.* 1540-1550 therefore appears very reasonable.

If the date of the Silvester sheets can thus be brought close to 1540, their relation to the Bos-Crinitus group of sheets issued in or around 1540[7] must be further considered. These sheets are known with both Latin and Flemish-Netherlandish text. The Latin text is a composite consisting of *Viva delineatio* so far as it applies to the male figure (i.e. omitting the section *De utero*),

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[5] L. H Wells, "Anatomical fugitive sheets with superimposed flaps, 1538-1540," *Medical History*, 1968, *12*: 403-407.

[6] S. G. Lindberg, "Chrestien Wechel and Vesalius, twelve unique medical broadsides from the sixteenth century," *Lychnos*, 1953, 54-70.

[7] Wells, *op. cit* (n. 5 above).

Perutilis anatomes, and *Secretarum corporis partium muliebris sexus debita delineatio*; the Flemish, so far as can be ascertained from Crummer[8] and de Lint,[9] appears to be identical with that of the Silvester Flemish issue, combining an abridgement of *Viva delineatio* for the male figure with the 1538 version of *Anathomia* for the female. Thus Bos (or Crinitus, whichever was responsible) and Silvester drew on partially different sources of inspiration for their Latin texts, but for the Flemish text either had a common source or one copied the other. I should at present consider it slightly more probable that Silvester copied Bos-Crinitus than the reverse. Silvester's French text, as has been noted, appears to be substantially identical with the Flemish, and I likewise consider translation from Flemish into French somewhat more likely than the opposite. It must also be borne in mind that since Bos reprinted Ryff's Anatomy in both Latin and French (though not, so far as is at present known, in Flemish), the sheets which bear his figures might have been issued with French as well as Flemish and Latin texts.

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[8] L Crummer, "Early anatomical fugitive sheets," *Ann. Med Hist.*, 1923, *5*· 89-208.

DID AVERROES DISCOVER RETINAL SENSITIVITY?*

DAVID C. LINDBERG

The search for precursors of Felix Platter (1536-1614) and John Kepler (1571-1630) on the theory of retinal sensitivity has been a favorite recreation of ophthalmologists and historians of ophthalmology for the past three-quarters of a century. The modern phase of this pastime may be dated from Vincenz Fukala, who argued in 1901 that the Spanish Muslim Averroes (1126-1198) had anticipated Platter and Kepler in identifying the retina as the sole light-sensitive organ of the eye. Relying entirely on Averroes' *Colliget,* which he quotes at some length, Fukala concludes:

> It is commonly believed that Felix Platter first . . . presented the doctrine that the retina was the true light-sensitive organ, and not the lens, as had been maintained since Galen. However, historians have recognized that Averroes (1126-1198) had already stated this idea five hundred years earlier. I have gathered this from Averroes' work, the *Colliget,* 1531, where it is maintained that Galen's opinion that the lens is the light-sensitive part of the eye is false; only the retina has this power, though with the help of the lens, which forms the images. Averroes accepts the mediation of air or water, respectively, as a necessary condition for the transmission of rays; the lens forms the images on the retina, the latter being the light-sensitive membrane.[1]

Fukala's claim remained unchallenged until Bruce Eastwood undertook a more careful analysis of the relevant passages in the *Colliget* and concluded that Averroes presented no such view. Eastwood writes, in summary:

> Despite some superficial ambiguity in parts of the text, it is clear that Averroes located photoreceptivity at the lens. Photosensitivity was given to the visual spirit. The retina, where mentioned, was made to serve only a nutritive function. In short, no departure from the literary tradition in ophthalmology appears in Averroes' chapters on the eye and sight.[2]

Recently, however, Huldrych Koelbing has taken up Fukala's cause, pointing out that if retinal sensitivity is not unambiguously taught in Averroes' *Colliget,* there are other works of Averroes where it is clearly established.

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*The author's research on early theory of vision, including the present topic, has been supported by grants from the National Science Foundation, the Graduate School of the University of Wisconsin, and the Institute for Advanced Study (Princeton)

[1] Vincenz Fukala, "Historischer Beitrag zur Augenheilkunde," *Archiv fur Augenheilkunde,* 1901, *42* 204.

[2] Bruce S. Eastwood, "Averroes' view of the retina—A reappraisal," *J Hist Med & Allied Scie* , 1969, *24*: 81

Basing his analysis on several paragraphs of Averroes' *Epitome of the Parva Naturalia,* Koelbing concludes:

> The first [paragraph] contains the clear statement that the movement which transmits the forms of visible things to the eye passes straight through all its transparent media until it reaches its innermost coat. This coat actually is the retina; here, and only here, the transmission of visible "forms" through the several transparent media of the eye comes to an end. Not the lens, then, but the retina is, according to Averroes, the place where "forms change from a corporeal transmission to a spiritual one," as Eastwood puts it. In modern terms, we might say: here visual impressions change from an optical transmission to a neural one. Both statements contain a concise and essentially true description of the retina's role in vision.[3]

I should like to argue, briefly, that Eastwood was correct in protesting the attribution to Averroes of the theory of retinal sensitivity.[4] To be sure, Koelbing refers to a treatise ignored by Eastwood, containing passages which might seem to teach a theory of retinal sensitivity if not interpreted with great care. However, examined in historical context, these passages reveal nothing more than a twelfth-century Islamic restatement of certain Galenic claims.

Let us begin with Averroes and work backwards. In the passage regarded as crucial by Koelbing, Averroes argues as follows:

> The innermost of the coats of the eye [i.e., the retina] must necessarily receive the light from the humors of the eye, just as the humors receive the light from the air. However, inasmuch as the perceptive faculty resides in the region[5] of this coat of the eye, in the part which is connected with the cranium and not in the part facing the air, these coats, that is to say, the curtains of the eye, therefore protect the faculty of the sense by virtue of the fact that they are situated in the middle between the faculty and the air.[6]

Later in the same treatise, Averroes comments that "this water [the vitreous humor], which is conjoined to the innermost curtain [the retina], is the final part of the eye, and through it the common sense receives the forms coming to it from outside."[7] Substantially the same theory appears in Averroes' *Colliget*:

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[3] Huldrych M. Koelbing, "Averroes' concepts of ocular function — another view," 1972, *27:* 210-11.

[4] By "the theory of retinal sensitivity" I mean the belief that the retina is the *principal* photosensitive organ of the eye, the *principal* instrument of vision Historically Galenists (and, indeed, Galen himself) have maintained that the retina possesses sensitivity, without holding that it is the principal sensitive organ

[5] There is some doubt about Averroes' intent at this point; the Latin text reads "horizon" rather than "region "

[6] Averroes, *Epitome of the Parva Naturalia, translated from the original Arabic and the Hebrew and Latin versions,* tr. Harry Blumberg (Cambridge, Mass.. Harvard Univ. Press, 1961), p. 9. For the Latin text, see *Averrois Cordubensis Compendia librorum Aristotelis qui Parva naturalia vocantur,* ed A. L Shields and Harry Blumberg (Cambridge, Mass.: Harvard Univ. Press 1949), pp. 12-13.

[7] I render this passage from the Latin edition of Shields and Blumberg, p. 38: "Et ista aqua, que coniuncta est reti posteriori, est postrema parcium oculi et per eam recipit sensus communis formas venientes ad ipsum ab

> And you know that the sense of sight receives the forms of things in this manner. First air, when light mediates, receives the forms of things and transmits them to the anterior tunic [the cornea], which conveys them to the other tunics until the motion reaches the final tunic [the retina], behind which is situated the common sense, which apprehends the forms.[8]

Each of these passages assigns to the retina an important role in the reception of the forms of visible objects, and one might be led by a cursory reading of them and a restriction of his attention to *these* passages that it is the principal role.

To understand Averroes' true position, it is necessary to take into account several other passages, where Averroes attaches special importance to the crystalline lens in the transmission of forms from the visible object to the common sense. In the *Epitome of the Parva Naturalia,* Averroes writes:

> In the middle of these coats [i.e., in the center of the eye] lies the crystalline coat [the crystalline lens], which is like a mirror, partaking equally of the nature of air and of the nature of water. This coat, therefore, receives the forms from the air, since it is like a mirror, and it conveys them to the water [the vitreous humor].[9]

Similarly in the *Colliget,* Averroes argues that

> in the middle of these tunics is the glacial coat [the crystalline lens], which is like a mirror, a mean between the natures of air and water, and therefore it receives the form of the air, because it is like a mirror, and it conveys the forms to the water [the vitreous humor] because its nature participates in those two natures. . . . And thus the common sense receives the form.[10]

In yet another passage from the *Colliget,* Averroes makes it perfectly clear that the crystalline lens, rather than the retina, is the *primary* recipient of the forms of visible objects: "And it appears that the proper instrument of that sense [sight] is the round humor, called the crystalline or glacial humor, or else the fine spider's web that is placed over it."[11] The "spider's web *(reticula aranea)*" is a hypothetical membrane covering the anterior surface of the

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extrinseco." Blumberg's English translation (p. 19) appears somewhat defective at this point, though the same view is conveyed.

[8] *Colliget* (Venice, 1562), Bk III, chap 38, fol 53ra: "Et scias quod sensus visus recipit formas rerum in hunc modum, quia aer mediante lumine recipit formas rerum primo, et postea mittit ad tunicam [anteriorem], et illa dat aliis, quousque hic motus pervenit ad tunicam postremam, post quam stat sensus communis, qui apprehendit formas rerum " Where I have inserted "anteriorem," the text reads "inferiorem," but emendation is clearly required.

[9] *Epitome*, tr. Blumberg, pp 18-19

[10] *Colliget, loc cit.*. "Et in medio istarum est tunica glacialis, quae est sicut speculum, media inter naturam aeris et aquae, et propterea recipit figuram aeris, quia est sicut speculum, et mittit eas aque, quia sua natura communicat istis duabus naturis . Et in hoc recipit sensus communis formam "

[11] *Ibid.*, Bk II, Chap 15, fol 25rb-va. "Et apparet quod proprium instrumentum illius sensus sit humiditas rotunda, que vocatur crystallina vel glacialis, aut reticula aranea posita super hanc humiditatem." It appears to me that substantially the same claim appears in the *Epitome*, tr Blumberg, p 20· "It is therefore clear from the

crystalline lens, actually the anterior capsule of the lens;[12] thus both alternatives amount to the same thing, and it remains that the crystalline lens is the principal instrument for receiving the forms of outside objects. The case is clinched when we note that the functions assigned by Averroes to the retina in the chapter of the *Colliget* on the parts of the eye and their functions do not include photoreceptivity or photosensitivity:

> But the first function of the retina is to transport the visual spirit through its nerves . . . and through the two nerves [the optic nerves] that go [from the brain] to the eyes. The retina also nourishes the crystalline humor in the manner of dew and provides natural heat through its arteries.[13]

It is true that the *Colliget* is more explicit on retinal function than is the *Epitome*, and I have been forced to quote from the former in order to establish the finer details of what I take to be the genuine Averroistic theory; but since the two works contain perfectly compatible descriptions of vision, there is no reason whatsoever to doubt that, although differing in completeness, they were intended to express a single theory. Moreover, all of the passages employed by Koelbing to demonstrate the presence of the theory of retinal sensitivity in the *Epitome* have nearly identical counterparts in the *Colliget* — and in the latter it is made perfectly clear that the crystalline lens, rather than the retina, is to be regarded as the primary sensitive organ of the eye.[14]

Thus far I have argued solely on the basis of evidence internal to Averroes' writings, but the case can be made still stronger by reference to the tradition that lies behind them. Indeed, I believe it is possible to identify the very source of the Averroistic claim that Koelbing interprets as an expression of the theory of retinal sensitivty. In Book X of *De usu partium*, Galen provided

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foregoing that the imprint of the form will be seen by the common sense through the medium of the eye, and the eye will see through the medium of the air, and it will see the form within the watery humor of the eye by means of the crystalline lens. . . ." However, I admit to a certain ambiguity in this passage, and if Koelbing (or others) should argue that it lacks evidential value for the theory of crystalline sensitivity, I would (though disagreeing with them) yield to their point The passage is not crucial to my case, and I will ignore it in the arguments to follow.

[12] Not Zinn's zonule, as Eastwood maintains, "Averroes' View of the Retina," pp. 79-81. See Galen, *On Anatomical Procedures The Later Books*, tr. W L. H. Duckworth (Cambridge· Cambridge Univ. Press, 1962), pp. 40-41; Max Meyerhof, ed and tr , *The Book of the Ten Treatises on the Eye ascribed to Hunain ibn Is-hâq (809-877 A.D)* (Cairo, 1928), p. 10, n 3

[13] *Colliget*, Bk. II, chap 15, fol 25va-vb: "Sed iuvamentum telae retinae primum est ut det spiritum visibilem per nervos qui sunt in ipsa . . et per duos nervos qui vadunt ad oculos; et etiam nutrit crystallinam humiditatem per viam rorationis, et dat iuvamentum caloris naturalis per arterias quae sunt in ea." The 1562 edition of the *Colliget*, which I here quote, reads "spiritu" rather than "spiritum," but emendation is required if the passage is to make sense; moreover, Crombie, quoting from the 1553 edition, reads "spiritum" (A. C. Crombie, *Robert Grosseteste and the Origins of Experimental Science 1100-1700* [Oxford. Clarendon, 1953], p. 153, n 3)

[14] In my view, this is also stated in the *Epitome*, though with less clarity and precision than here, see n. 11, above.

a long discussion of ocular anatomy and the visual process. Each ocular organ was described in turn, and of the retina Galen wrote: "Its principal and greatest usefulness, that for the sake of which it was brought down from above, is to perceive the alterations of the crystalline humor and in addition to convey and transmit nutriment to the vitreous humor."[15] Now this passage says as much about retinal sensitivity (and, indeed, the same things about retinal sensitivity) as any passage that Koelbing can find in the writings of Averroes, and it is apparent that if we wish to maintain that Averroes regarded the retina as the primary sensitive organ, then we must admit that so also did Galen.[16]

But what could Galen have meant by such a claim? To obtain the answer, we must glance briefly at his theory of vision. According to Galen, visual or optic pneuma is sent from the brain through the optic nerves, which are hollow, to the eye; the pneuma emerges from the eyes and "is united at the first impact with the surrounding air and alters the air to its own peculiar nature. . . ."[17] As a result, the air itself becomes percipient; it "becomes for the eye the same kind of instrument for the proper discrimination of its sense-objects, as the nerve is for the brain. . . ."[18] It becomes, in short, an extension of the optic nerve, able to perceive visible qualities by direct contact. But visual power is not merely transmitted through the optical pathway and the air to the visible object; perceptions or sensations must in some manner be returned to the brain along the same route. Galen makes this clear in *De usu partium,* when he points out that the crystalline lens — by virtue of being clear, radiant, and gleaming — can be "altered by colors";[19] similarly in *De placitis Hippocratis et Platonis,* Galen speaks of the transmission of qualitative changes from the sense object to the eye and ultimately to the brain.[20] Thus Galen conceives of a chain of media, conducting visual power to the observable object and visual impressions (or qualitative changes) back to the brain.

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[15] Galen, *On the Usefulness of the Parts of the Body,* tr Margaret T. May (Ithaca: Cornell Univ. Press, 1968), p. 465 On the wide circulation of this treatise in Arabic translation, see Emilie Savage Smith, "Galen on Nerves, Veins and Arteries: A Critical Edition and Translation from the Arabic, with Notes, Glossary and an Introductory Essay" (unpublished doctoral dissertation, University of Wisconsin, 1969), pp. 10-17

[16] It must be emphasized that Averroes' theory of vision was fundamentally Aristotelian; this is one of several points, however, at which Galenic influence can be perceived

[17] Galen, *De placitis Hippocratis et Platonis,* VII, 4, tr. Phillip De Lacy (forthcoming in the *Corpus Graecorum medicorum*). I express gratitude to Professor De Lacy for making available to me his text and translation of *De placitis* and for granting permission to quote from them. Cf. *Claudii Galeni Opera omnia,* ed. C G Kühn, V (Leipzig, 1823), 617. The theory of visual pneuma here expressed is found principally in *De placitis,* but can be perceived also in the *Usefulness of Parts (De usu partium),* tr May, p. 501

[18] *De placitis,* VII, 5, tr. De Lacy; cf. *Opera omnia,* ed. Kühn, V, 625.

[19] Galen, *Usefulness of Parts,* tr. May, p. 464

[20] Rudolph E Siegel, *Galen on Sense Perception* (Basel, New York: Karger, 1970), pp. 71-72.

Now in Galen (and consequently in many of his followers), there was considerable ambiguity about the functions of particular organs involved in this visual transmission. If there is a continuous chain of instruments between the observer's brain and the visible object, is it possible for particular instruments (say, the crystalline lens or the retina) to have unique functions? Although the matter was never fully clarified, it is clear that on certain occasions Galen and his followers did assign a particular function, and sometimes a particularly important function, to one or another of the organs involved in the transmission process. It is in this context, then, that one must understand Galen's claim that the "principal and greatest usefulness" of the retina "is to perceive the alterations of the crystalline humor. . . ."[21] But in weighing this claim, we must recognize that Galen also calls attention to the sensitivity of the crystalline lens and (most significantly) maintains that the crystalline lens is the *principal* sensitive organ: "I have . . . said that the crystalline humor itself is the principal instrument of vision, a fact clearly proved by what physicians call cataracts, which lie between the crystalline humor and the cornea and interfere with vision until they are couched."[22]

Thus Galen could seem to speak of retinal sensitivity — i.e., he could assign the retina a significant function in the transmission of visual power from the brain to the visible object and of visual impressions from the visible object to the brain — without regarding the retina as the principal instrument of vision. It is this — no more and no less — that Averroes intended when he stated in the *Colliget* and the *Epitome* that the retina receives light from the humors of the eye. The retina, lying at the rear of the eye, necessarily participates in the transmission of visible forms to the common sense, which resides behind it;[23] but this does not mean that the retina is the principal sensitive organ of the eye — a function that Averroes, no less than Galen, reserved for the crystalline lens.

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[21] Above, n 15.

[22] Galen, *Usefulness of Parts*, tr. May, pp. 463-64.

[23] It is not clear precisely where Averroes wishes to locate the common sense, as "behind the retina" could designate a number of different places. Blumberg (*Epitome*, p. 82, n. 134) speculates that Averroes followed Aristotle in locating the common sense in the heart. I incline toward the view that Averroes followed Galen and Avicenna in locating it in the anterior region of the brain; this, I believe, is most consistent with Averroes' description of it as "behind the retina." Bruce Eastwood ("Averroes' view of the retina," pp. 80-81) proposes to locate the common sense at the optic chiasma (the junction of the optic nerves leading from the two eyes); however, I know of no medieval writer to have suggested such a location (since the common sense has to do with all the senses, and not merely vision), and Eastwood supports this proposal only by taking the unacceptable liberty of translating Averroes' *sensus communis* as "chiasma." For a brief discussion of the common sense, see Harry A. Wolfson, "The Internal Senses in Latin, Arabic, and Hebrew Philosophic Texts," *Harvard Theological Review*, 1935, *28*. 95 ff.

CORRESPONDENCE AND REPORTS

CAREER CHOICES OF MACY FOUNDATION FELLOWS IN THE HISTORY OF MEDICINE AND THE BIOLOGICAL SCIENCES

JOHN Z. BOWERS and MARY E. CUNNANE*

The Josiah Macy, Jr. Foundation has conducted a survey of the career choices of Macy Fellows in the History of medicine and the Biological Sciences who held awards from the inception of the program in 1966 through the academic year 1972-73.[1] At the beginning of the program, the fellows were selected by departments of the history of medicine or science, but since 1968 they have been chosen through national competition by a selection committee.

Of the fifty-three former fellows surveyed, of whom there are eleven women and forty-two men, twenty-eight were predoctoral fellows, twenty-three postdoctoral, and two held consecutive fellowships at both levels.

Thirty-eight of the former fellows are now in academic posts in thirty different institutions. Twenty-eight of these are currently teaching at least one course in the history, philosophy or sociology of medicine — sixteen in schools of medicine or public health. Eight former fellows are non-academic health-related positions; four have no academic affiliations; and three are completing their training in medical or graduate school.

Of the thirty-eight former fellows with academic positions, two are professors, seven are associate professors, twenty-two assistant professors, and one is a research associate. Two are senior lecturers in foreign universities: one, at University College London, is also head of the sub-department of the history of medicine; the other is at the University of New South Wales in Australia. Three former fellows are lecturers at American universities. The rank of one was not determined.

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[1] For a brief history of the founding of the program, see Vernon W. Lippard, "The Josiah Macy, Jr. Foundation Program in the History of Medicine and the Biological Sciences", *Bull Hist. Med.*, May-June 1969, *43*(3), 268-69

SURVEY OF MACY FELLOWS IN THE HISTORY OF MEDICINE AND THE BIOLOGICAL SCIENCES

Name	Years	Level and School	Current Position
1. ALBURY, William, Ph.D.	1972-73	Postdoctoral, Johns Hopkins Institute of the History of Medicine	Lecturer in the History of Biology, University of New South Wales
2. ALLEN, Edwin J., Ph.D.	1966-68	Postdoctoral, University of Washington	Assistant Professor of Anthropology, Western Washington State College
3. ATWATER, Edward C., M D., M.A.	1970-71	Postdoctoral, Johns Hopkins Institute of the History of Medicine	Associate Professor of Medicine, Assistant Professor of the History of Medicine, University of Rochester School of Medicine
4. BARTHOLOMEW, James, Ph D.	1969-71	Predoctoral, Harvard University	Assistant Professor of Japanese History, The Ohio State University
5. BLANC, Esther, Ph.D.	1967-69	Predoctoral, University of California, San Francisco	Lecturer in the History of Health Sciences, University of California, San Francisco
6. BUCK, Peter, Ph.D.	1969-71	Predoctoral, Harvard University	Lecturer in the History of Science, Harvard University
7. BURKHARDT, Richard W , Ph.D	1969-71	Predoctoral, Harvard University	Assistant Professor of History, University of Illinois
8. BUSH, Ronnie B., M.A.	1967-69	Predoctoral, New York University	Associate Professor and Vice Chairman, Department of History and Philosophy of Medicine, The Chicago Medical School
9. BYLEBYL, Jerome, Ph D.	1968-69	Predoctoral, Yale University	Assistant Professor, Department of History, Assistant Professor, Morris Fishbein Center for the History of Science and Medicine, The University of Chicago.
10. BYNUM, William, M.D.	1970-73	Postdoctoral, Cambridge University	Lecturer and Head, Sub-department of the History of Medicine, University College London
11. CADDEN, Joan, Ph D.	1969-71	Predoctoral, Indiana University	Assistant Professor and Head Tutor, History of Science, Harvard University
12. CHEFFER, Jack B.	1970-72	Predoctoral, Indiana	Withdrew due to illness
13. DECKER, Hannah, Ph.D	1967-70	Postdoctoral, Cornell University Medical College	Assistant Professor of History, University of Houston
14. EYLER, John, Ph D.	1971-72	Postdoctoral, University of Wisconsin	Assistant Professor of History of Medicine,

Survey of Macy Fellows in the History of Medicine and the Biological Sciences (Continued)

Name	Years	Level and School	Current Position
15. FARBER, Paul, Ph.D.	1967-70	Predoctoral, Indiana University	Assistant Professor of the History of Science, Oregon State University
16. FEINSTEIN, Howard, M.D.	1967-69	Postdoctoral, Cornell University	Associate Professor of Psychology, Cornell University
17. FIELDLING, Jonathan, M.D.	1968-69	Predoctoral, Harvard University	Director, Division of PSRO, Bureau of Quality Assurance, Department of HEW
18. GALISHOFF, Stuart, Ph.D.	1967-68	Predoctoral, New York University	Assistant Professor of History, Georgia State University
19. GELFAND, Toby, Ph.D.	1970-71	Predoctoral, Johns Hopkins Institute of the History of Medicine	Assistant Professor of the History and Philosophy of Science, Princeton University
20. GIFFORD, George E., Jr., M.D.	1969-70	Postdoctoral, Harvard University	Associate Professor and Chairman, Section of the History of Medicine, Boston University School of Medicine
21. GIFFORD, James, Ph.D.	1967-69	Predoctoral, Duke University	Assistant Professor of History, Guilford College
22. HANNAWAY, Caroline, Ph.D.	1970-72	Predoctoral, Johns Hopkins Institute of the History of Medicine	Research Fellow, Institute of the History of Medicine Lecturer, School of Health Services, The Johns Hopkins University
23. HANSON, Vivien, M.D.	1966-69	Postdoctoral, University of Washington	Public Health Clinician, Seattle Health Department
24. HOWARD, R. Palmer, M.D.	1967-68	Postdoctoral, Tulane University	Professor of the History of Medicine, University of Oklahoma Health Sciences Center
25. JADON, Samira, Ph.D.	1967-69	Predoctoral, University of California, Los Angeles	University of San Diego
26. JAHN, Melvin	1967-69	Predoctoral, University of California, San Francisco	no academic affiliation
27 JETTER, Dieter, M.D.	1967-68	Postdoctoral, University of California, Los Angeles	Professor of the History of Medicine, University of Cologne
28. JONES, Daniel, Ph.D.	1969-71	Postdoctoral, Johns Hopkins University	Assistant Professor of the History of Science, Oregon State University

Survey of Macy Fellows in the History of Medicine and the Biological Sciences (Continued)

Name	Years	Level and School	Current Position
29. KAUFMAN, Martin, Ph.D	1966-68	Predoctoral, Tulane University	Associate Professor of History, Westfield State College
30. KAY, Alan S.	1969-70 (resigned 2/16/70)	Predoctoral, Yale University	no academic affiliation
31. KOHLER, Robert E., Ph.D.	1968-70	Postdoctoral, Harvard University	Assistant Professor of the History and Sociology of Science, University of Pennsylvania
32. KUNITZ, Stephen, M.D., Ph.D.	1967-69	Postdoctoral, Yale University	Assistant Professor of Preventive Medicine, Community Health and Sociology, University of Rochester, School of Medicine
33. LAMPTON, David, Ph.D.	1973-74	Postdoctoral, University of Michigan	Assistant Professor of Political Science, The Ohio State University
34. LEVIN, Kenneth, M.D., Ph.D.	1971-73	Predoctoral and Postdoctoral, Princeton University	Resident in Psychiatry, Beth Israel Hospital, Boston
35. LOMAX, Elizabeth, Ph.D., M.D.	1967-71	Predoctoral and Postdoctoral, University of California, Los Angeles	Consultant in the History of Science to the Committee on Brain Sciences, National Research Council, 7/72-7/74
36 MAULITZ, Russell, M.D., Ph.D.	1967-73	Predoctoral, Duke University	Assistant Professor of the History and Sociology of Science, University of Pennsylvania
37. MAY, J. Thomas, Ph.D.	1966-68	Predoctoral, Tulane University	Assistant Professor of the History of Medicine, School of Medicine, Assistant Professor of Human Ecology, School of Health, University of Oklahoma
38. MORRIS, James P., III, Ph.D.	1968-71	Predoctoral, Tulane University	Assistant Professor of the History of Medicine, Institute for the Medical Humanities, University of Texas, Galveston, Medical Branch
39. NIEBYL, Peter, M D , Ph.D.	1967-69	Postdoctoral, Yale University	Assistant Professor, Institute of the History of Medicine, The Johns Hopkins University School of Medicine, Assistant Professor of the History of Science, The Johns

Name	Years	Level and School	Current Position
40. O'NEILL, Ynez V., Ph.D.	1966-69	Postdoctoral, University of California, Los Angeles	Assistant Professor, Medical History Division, University of California at Los Angeles School of Medicine
41. PARASCANDOLA, John, Ph.D.	1968-70	Postdoctoral, Harvard University	Director, American Institute of the History of Pharmacy, Associate Professor of the History of Pharmacy and the History of Science, University of Wisconsin
42. PERKINS, John, Ph.D.	1970-71	Postdoctoral, Harvard University	Principal Staff Officer, Study of Problems of Pest Control, National Academy of Science
43. PETERSON, Donald, M.D.	1969-72	Postdoctoral, Johns Hopkins Institute of the History of Medicine	Resident in Pathology, University of Maryland, School of Medicine
44. PHILLIPS, Daniel, M.D.	1966-67	Predoctoral, Yale University	Staff Member, Cardiac Laboratory, Cleveland Clinic Hospital
45. RISSE, Guenter, M.D., Ph.D.	1967-69	Postdoctoral, University of Chicago	Associate Professor and Chairman, Department of the History of Medicine, University of Wisconsin, Center for Health Sciences
46. ROSENBERG, Alan	1971-72	Predoctoral, Cambridge University	graduate student
47. SLOAN, Phillip R , Ph.D.	1967-69	Predoctoral, University of California, San Diego	Assistant Professor of the History of Science, University of Notre Dame
48. SMITH, Emilie, S., Ph.D.	1969-70	Postdoctoral, University of Washington	Research Associate in the History of Science, California State College
49. VALADEZ, Frances, Ph.D.	1968-69	Predoctoral, University of California, Los Angeles	no academic affiliation
50. VISSER, William	1972-73	Predoctoral, Columbia University	South American Coordinator, United Nations Fund for Population Activities
51. WERDINGER, Jeffrey	1970-71	Predoctoral, Indiana University	graduate student
52. WHORTON, James C., Ph.D.	1969-70	Postdoctoral, University of Washington	Assistant Professor, Department of Biomedical History, University of Washington School of Medicine
53. ZIOBROWSKI, Thomas	1972-73	Predoctoral, University of Pennsylvania	medical student

MEDICO-HISTORICAL NEWS AND ACTIVITIES

ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

At the Annual Meeting held in Philadelphia from April 30 to May 3, 1975, the William H. Welch Medal was awarded to George W. Corner with the citation: "With a body of work which is both extensive and impressively diverse, this outstanding scholar and scientist has made an invaluable contribution to the field of the history of medicine."

The following officers and Council members were elected:

Secretary-Treasurer (2 year term)	Genevieve Miller, Cleveland, O.
Members of Council (3 year term)	John C. Burnham, Columbus, O. Audrey B. Davis, Washington, D.C. Guenter B. Risse, Madison, Wis. Richard J. Wolfe, Boston, Mass.

Osler Medal Essay Contest, 1976

Students in medical schools of the United States and Canada and graduates of the class of 1975 are encouraged to enter the Osler Medal contest. Essays in the history of medicine, of a maximum length of 10,000 words, must be submitted by March 1, 1976, to the Chairman of the Osler Committee of the American Associaton for the History of Medicine, Dr. Peter D. Olch, National Library of Medicine, 8600 Rockville Pike, Bethesda, Md. 20014. Further information about rules and eligibility should be obtained from Dr. Olch.

NATIONAL NEWS

Albert Einstein College of Medicine

"Ways of Healing: Ancient and Contemporary," a two-day symposium sponsored by the Department of Psychiatry and the Office of Continuing Medical Education of the College, in cooperation with the Institute for the Study of Human Knowledge, Stanford, Calif., was held at the Biltmore Hotel, New York City, April 19-20, 1975. Topics for discussion included "Hippocrates in Modern Dress," René Dubos; "Navajo Indian Medicine," Robert Bergman; "Chinese Medicine and Acupuncture," Mathew Lee; "Biofeedback Training," Gary Schwartz; "Psychosomatic Medicine," Jerome Frank.

American Osler Society

The Society held its annual meeting at the National Library of Medicine, Washington, D.C., on April 30, 1975. The following papers were presented: "Osler and Sherrington," William H. Gibson; "A Clinical Clerkship from a Student's Point of View," William B. Bean; "William H. Welch — a Comparative view," Peter H.

Niebyl; "William S. Halsted, the Antithesis of William Osler," Peter D. Olch; "The Esther Rosencrantz Collection of Osler Iconography," Earl F. Nation; and "Osler — His Quest of the Gnostic Grail in Morbid Anatomy," Howard B. Burchell.

Boston University

The Josiah Macy, Jr. Foundation has awarded a grant of $10,000 to the School of Medicine for a two-year period. The grant is to assist in the development of a program in the history of medicine which is under the direction of George E. Gifford, Jr., Associate Professor of Socio-medical Sciences and Head of the Section on Medical History.

New Hampshire Historical Society

As a part of the American Revolution Bicentennial the Society, in conjunction with the New Hampshire ARBC and the National Historical Publications Commission, is currently sponsoring microfilm and letterpress editions of the papers of its most conspicuous founder, Josiah Bartlett (1729-1795), prominent New Hampshire physician, signer of the Declaration of Independence, and the state's first governor. Frank C. Mevers is editor of the three-year project which will be completed by September 1977.

New Jersey

For the Bicentenary, the Academy of Medicine in New Jersey, the Medical Society of New Jersey, and the College of Medicine and Dentistry of New Jersey, are collaborating in an exhibition of manuscripts, publications and instruments associated with medical men of the state who served in the Revolutionary War. Persons willing to lend exhibit material are requested to inform Dr. Morris Saffron, Academy of Medicine of New Jersey, 2424 Morris Ave., Union, N.J. 07083.

Ohio Academy of Science

Of papers presented at the tenth Annual History of Science Meeting in Columbus on March 8, 1975, two dealt with medical topics: "The Role of John Heckwelder in American Science and Medicine," Theodore W. Jeffried, and "Some Environmental Theories of Disease in Early 19th Century America," Lael E. Bradshaw.

Philadelphia

On March 11, 1975, Dr. Harry F. Dowling delivered the Kate Hurd Mead Lecture of the College of Physicians of Philadelphia, Section on Medical History. He spoke on "The Emergence of Large Scale Clinical Trials."

Smithsonian Institution

The National Museum of History and Technology and the Division of Medical Sciences of the Smithsonian Institution held a Microscope Symposium on May 9, 1975. Guest speakers were Gerard L'E. Turner, Donald L. Padgitt and James H. Cassedy.

Toledo, Ohio

At ceremonies commemorating the dedication of the Raymon Mulford Library, the Medical College of Ohio at Toledo conferred the honorary degree of Doctor of Science upon Dr. Frank Bradway Rogers and Dr. Owsei Temkin. Dr. Rogers spoke on "Medical Bibliography — Billings, Fletcher and Garrison," and Dr. Temkin discussed "History and Prophecy: Meditations in a Medical Library."

University of Connecticut

The second Trans-Disciplinary Symposium on Philosophy and Medicine, held May 15-17, 1975, included a session devoted to Historical Foundations of Modern Neurology, with papers by William Bynum ("Varieties of Cartesian Experience in Early 19th Century Neuro-Physiology") and Arthur Benton ("The Evolution of Hemispheric Cerebral Dominance"). H. T. Engelhardt was commentator.

University of Pittsburgh

The Maurice and Laura Falk Library of the Health Professions has received a $20,000 grant from the Maurice Falk Medical Fund for the establishment of the F. Sargent Cheever Historical Library Fund, named in honor of the former Vice Chancellor and President of the University Health Center of Pittsburgh. Income from the fund will be used for the preservation and restoration of the historical collection as well as for the acquisition of additional volumes. In addition to rare books, the Historical Collections Room also serves as a repository for the archives and memorabilia of the Pittsburgh Academy of Medicine.

University of Wisconsin

"Medicine without Doctors: Home Health Care in American History," was the theme of a symposium sponsored by the Department of the History of Medicine on April 4, 1975. Papers presented included: "What is Self-help in Medicine?" Guenter B. Risse; "Americans Alone with Their Diseases, 1760-1860," James H. Cassedy; "Do-it-yourself the Sectarian Way," Regina Markell Morantz; "Patent Medicines and the Self-help Syndrome," James Harvey Young; "From Buchan to Fishbein: the Literature of Domestic Medicine," John B. Blake; "Past and Present Self-help; an Evaluation," a panel discussion moderated by Lester S. King.

Election

Dr. George Rosen of the Yale Medical School has been elected to the Swedish Society of Medical Sciences (Section for Medical History).

PROGRAMS OF MEETINGS

Bay Area History of Medicine Club, San Francisco

November 13, 1974: "Blinders of the Mind: Historical Reflections on Functional Impairment of Vision," Ilza Veith.

January 8, 1975: "Aping Darwin — Victorian Satires on Evolution," Jeremy Norman.

February 12, 1975: "Paolo Sarpi and the Venous Valves," J. B. deC. M. Saunders.

March 12, 1975: "Thomas De Quincey's Lifelong Addiction," Francis Schiller.

April 9, 1975: "Socio-Historical Patterns of Health Care Delivery in San Francisco's Chinatown," Joan B. Trauner and Theresa Louie.

George W. Corner History of Medicine Society, Rochester, N.Y.

February 25, 1975: "The Temples of Aesculapius: Medicine as Science, Religion, and Psychotherapy," Maurice H. Charlton.

March 18, 1975: Paleopathology of the Indians of Western New York State," William S. Cornwell.

April 17, 1975: "The Illustrious Baron Dupuytren, Master-Surgeon of His Day," Robert M. McCormack.

May 22, 1975: "Female Decline in the 19th Century," Lora Block.

Handerson Medical History Society, Cleveland

March 17, 1975: "The Idea of Organic Evolution: Charles Darwin and His Predecessors," Patsy A. Gerstner.

May 14, 1975: "The Electrostatic Machine as an Elusive Cure for All; the Hope of Medicine in the Nineteenth Century," Paul A. Nelson, John Thomas Booker and Olgierd Lindan.

Johns Hopkins Medical History Club, Baltimore

April 29, 1975: "Walter Reed and Johns Hopkins," William B. Bean.

Josiah C. Trent Society for the History of Medicine, Durham, N.C.

May 15, 1975: "Claude Bernard, the Emergence of a Scientist," Frederic L. Holmes.

University of Virginia Medical History Society, Charlottesville, Va.

December 10, 1975: "The Dissertation, a Vanished Phenomenon in Medical Education," G.S.T. Cavanagh.

March 25, 1975: "Paracelsus: His Attitudes and Insights," Peter Krivatsy.

April 17, 1975: "Jefferson-Dunglison: An Early American Patient-Doctor Relationship," Jack C. Fisher.

Washington Society for the History of Medicine, Washington, D.C.

March 13, 1975: "Paramedical Personnel in Nineteenth-Century Russia: The Russian Feldscher," Samuel C. Ramer; Two films: "Vesalius, Founder of Modern Anatomy," and "Ambroise Paré, Military Surgeon."

May 17, 1975: "The Doctor and the Author in French Literature," Rev. Joseph N. Moody.

William Snow Miller Medical History Seminary, Madison, Wis.

March 13, 1975: "Landsteiner in America," Pauline M. H. Mazumdar.

April 23, 1975: "The Plague That Made Milwaukee Famous: An Urban Response to Epidemics in the 19th Century," Judith W. Leavitt.

NEWS FROM ABROAD

International Congress of the History of Medicine

The 25th International Congress will be held August 21-28, 1976, in Montreal and Quebec, Canada. Information about the Congress is available from the Société Canadienne d'Histoire de la Médecine, Faculté de Médecine, Chambre 0230, Bureau du Congrès International, Université Laval G.1K 7P.4, Quebec, Canada.

London

On April 2, 1975, Dr. Saul Jarcho delivered the inaugural address in a new lectureship established by the Royal College of Physicians. His topic was "The Legacy of British Medicine to American Medicine, 1800-1850."

Vienna

The Minister of Health of the People's Republic of Hungary, Primarius Dr. Emil Schultheisz, visited the Institute of the History of Medicine, University of Vienna (director: Prof. Dr. Erna Lesky) on March 10, 1975. Of particular interest to him was the work in progress on the documentation center for the history of biological sciences and the picture archives of the Institute. Dr. Schultheisz' visit added a new dimension to the relation between the Vienna Institute and the Semmelweis Museum in Budapest.

Request

A student of Egyptology at the Oriental Institute of the Free University of Brussels, specializing in the role of the physician, his knowledge, his place in society, etc., would like to communicate with medical historians interested in Egyptian pharaonic medicine. Write to Mlle Martine La Gravière, 10, rue Philippe Dewolfs, B-1170 Bruxelles, Belgium.

BOOK REVIEWS

Julius Preuss *Biblisch-talmudische Medizin: Beitrage zur Geschichte der Heilkunde ùnd der Kultur überhaupt*. New York: Ktav Publishing House, Inc., 1971, lxxxviii + 136 pp. $25.00.

First published in 1911, this classic saw at least two more unaltered editions. The last of these was published in Berlin in 1923, by S. Karger and is the text used for comparison with the present edition.

As the tables of contents show, there is no basic difference between the text of the 1923 edition and the one under review, which even maintains the textual pagination.

There is, however, a significant improvement that speaks well for the present publication. For one thing, both the paper and the print are much better. Secondly, there are important additions. An introductory chapter, "Julius Preuss — father of Hebrew Medical Research" (pp. vii-xxxii) by S. Muntner, which is written in English, may well serve the English reader who does not know German as a reliable summary of the original Preuss text. Also included are a brief biography of the author, plus a bibliography of his books and papers.

Dr. Paley's translation of the "Register of Hebrew and Aramaic Terms" (pp. xxxiii-lxxxv) ". . . is not a complete vocabulary of all of the Hebrew and Aramaic words quoted by Preuss," it is nevertheless a valuable contribution to the present book. The Register was prepared in handwritten copy by Dr. Lowinger several years after the original publication. Dr. Paley himself states, "The English translation of the Register and the Register itself have been supplied to assist the English-speaking student who may have cause to refer to this volume." If so, it seems to the reviewer that it would have been preferable and more logical and useful if Messrs. Preuss and/or Paley had completed the Register by giving also the German translation of the anatomical and disease terms. This would have been a linguistic gain, instead of giving only the original Hebrew and Aramaic terms of Preuss' listing followed merely by the page number where one may find them (pp. 729-30.)

Of course, that does not really help the non-German reader to appreciate the very thorough scholarly original German text of Preuss. What a pity that is. It may be equally regrettable that Preuss' own "Einleitung" (pp. 1-9) has not been rendered into English in the present edition.

In view of the above and until such time as an English translation of Preuss' text appears, perhaps I may not transgress my right as a reviewer only, if I offer a translation of the chapter headings of this valuable source of information on the subject at hand. It certainly should not detract much from what may strike one as a curious "match" between the two languages found in the edition under consideration.

Chapter 1. The Physician and the Other Medical Personnel,
Chapter 2. The Parts of the Body and Their Functions (Anatomy and Physiology.)
Chapter 3. Disease and its Treatment (General Pathology and Therapy.)
Chapter 4. Diseases and their Treatment (Special Pathology and Therapy.)
Chapter 5. Injuries and Malformations (Surgery.)
Chapter 6. Ophthalmology.
Chapter 7. Dentistry.
Chapter 8. Otology.
Chapter 9. Rhinology.
Chapter 10. Neurology.
Chapter 11. Psychiatry.
Chapter 12. Dermatology.
Chapter 13. Gynecology.
Chapter 14. Obstetrics.
Chapter 15. Therapeutics.
Chapter 16. Forensic Medicine.
Chapter 17. Public Health.
Chapter 18. Dietetics.
Chapter 19. Writings on Medicine in the Bible and Talmud (Bibliography).

If this will whet the appetite of an interested and able translator to complete the rendition of Preuss into English this review will have proven worthwhile.

Reviewed by MORDECAI ETZIONY, M.D., 14-A Ibn Shaprut, Apt. 4, Jerusalem, Israel.

WILLIAM G. ROTHSTEIN. *American Physicians in the 19th Century: from Sects to Science*. Baltimore: The Johns Hopkins University Press, 1972. xiv + 362 pp. $15.00.

In 1936 when Henry Burnell Shafer published his doctoral thesis "The American Medical Profession, 1783-1850" the *Bulletin of the History of Medicine* took no editorial notice of it. A reviewer for the *Annals of Medical History*, however, called the book "one of the most important contributions to the history of medicine in the United States." The following spring, Richard H. Shryock, then Professor of History at Duke University, speaking at the annual meeting of the American Association of the History of Medicine in Atlantic City — "The Historian Looks at Medicine" — drew attention to the growing interest of historians in the history of medicine and cited Shafer's pioneering work.

In the thirty-six years since Shafer wrote, there has been a small but steady cohort interested in studying American medical practice, led until lately by Dr. Shryock. Frederick Waite and William Norwood brought together material on American medical education, George Rosen provided information about specialization and economic aspects of practice, Wyndham Blanton, John Duffy, John Waring and others made contributions to regional or state professional history, and Rosen, Duffy, and John Blake to the history of public health. Alex Berman kindled interest in the social and economic aspects of sectarianism and Charles Rosenberg illustrated changes that were reflected in the attitude of the public and the profession in dealing with epidemic disease.

During the past decade there has been a marked increase in studies of medical professional history. Donald Konold, Daniel Calhoun, Joseph Kett, Harris Coulter, and Martin Kaufman, among others, have made contributions. The present book is the most ambitious so far.

Professor Rothstein begins with a thoughtful attempt to define the terminology and framework he proposes to use. This makes a rather heavy "front-end load" but it does turn the reader's attention to the economic factors which the author plans to emphasize. "Physicians," says Rothstein, "like all other professionals, are motivated largely by economic needs because they have no significant alternatives for income, and they are constrained in their behavior by competitors and by the body of knowledge available to them and . . . the institutions they develop are ways of dealing with these motivations and constraints."

The narrative chapters which follow include a brief description of medicine in the colonial period, chapters on early 19th-century practice, on medical societies and licensing (which, surprisingly does not mention the work of Shryock on the subject), medical education, and especially interesting chapters on the conflicting interests of medical societies and medical schools, and the pros and cons of specialization or differentiation — both technological and social — within the profession. These are interesting and informative. They are important, too, for their effort to examine medical sectarianism, long laughed at by "regulars" as quackery, as a serious social and economic phenomenon.

An attraction of this book is the imaginative use of quotations from contemporary participants. These demonstrate how aware and concerned professional leaders — men such as Billings, Sims, Davis, Drake, Bigelow and Coventry — were of conflicting interests and viewpoints. Resolution was apparently no simpler then than now.

It is the author's contention that sectarianism was eliminated by scientific discovery. The main problem which the author encounters is in dealing with the role of science vs economics. In spite of his economic interpretation of events, he seems to explain "the rise of modern medicine" at the end of the 19th century on the discoveries related to microbiology and asepsis. Hardly mentioned are substantial advances in medical science which occurred in the early 19th century (while the medical profession was deteriorating) or the impact which industrial prosperity had on the later period of spectacular improvement. He does not use the same rules for both periods equally but emphasizes economics in the earlier time and science in the later.

His statement that "the body of medical knowledge changed little in the first half of the 19th century" shows how much we have come to take for granted those things which did happen then. There is little attention to the increasingly frequent teaching of practical human anatomy by dissection (which was essential to the development of good surgeons and was virtually unknown prior to the 19th century), the development of physical examination techniques in the Paris hospitals after 1815 (techniques which were brought back by the many American students studying abroad), the correlation of the physical signs in the living patient with organ pathology found at the autopsy table, and the creation of the modern general hospital. These early 19th-century developments enabled physicians to make the more accurate diagnosis and the numerical (or statistical) analysis on which reform of treatment methods depended quite as much as on bacteriological discoveries and sectarian pressures.

Nor does the author's statement that "the theoretical and experimental aspects of medicine rarely concern 19th century physicians" apply the same economic reasoning used so satisfactorily elsewhere in the book. There were then no full-time investigators, at least partly because there was no one to pay for such a luxury. Investigators and teachers were then all self-supporting practitioners, many of whom did good fundamental clinical research. That *most* practitioners had little interest in theory or experiment is no less true today. The research establishment of the 20th century was a function of prosperity and endowment as much as of scientific necessity.

Mr. Rothstein tends sometimes to emphasize the worst from the past and the best from the present. Though he faults studies in American history for examining "developments in medical science and changes in medical institutions without reference to the behavior of the individual physicians involved" he does not always apply this same standard to contemporary physicians. To say, speaking of the early 19th century, that "not all preceptors were incompetent, and not all medical students were lackadaisical about their education" betrays a little bias and implies that today all teachers love teaching, all students are committed and all practitioners understand and apply the latest pathophysiologic concepts in what they do, not losing sight of the patient as a whole while doing so. All of this is because today we have "science"; yesterday we did not.

Some of the historical evidence does not readily support this scientific "breakthrough" interpretation of history which has been so popular in the past century. The author gives the impression that with one or two minor exceptions there was little or no "medically valid" therapy prior to the great bacteriological discoveries and that now most medical therapy *is* valid. He and other recent writers so stress the use of bleeding and calomel that they give the impression that nothing else was ever done therapeutically. It is true that both these modalities were in almost universal use and were rarely beneficial and often harmful in their effects, but it is misleading not to recognize that there were also "valid" therapies in use then and that there have been in our own time medically aggressive forms of treatment which were later discarded as largely useless or harmful. Radical surgery for malignancy, or most tonsillectomies, or thymic radiation in the young are examples of this. And let no one imagine that all of the aggressive pharmacological therapy in use today will survive the careful inspection which time will make possible.

Nor was medically valid therapy unknown prior to 1860. Advances in vascular surgery such as the ligation of ruptured or aneurysmic vessels, in the handling of fractures, in manipulative reductions of dislocated joints, or the repairing of the common and disabling vesico-vaginal fistula resulting from traumatic childbirth, to say nothing of vaccination, were not trivial scientific advances compared to the practices of the 18th century.

In spite of these biases, there are many virtues to the book. The historical narrative examines many different aspects of the medical profession, and gives the reader one of the most comprehensive views of American medical history yet available. It draws attention to the importance of economic motivation in professional activities and to the social significance of medical sectarianism. It makes it clear that our present dilemina of providing well-trained physicians (an expensive luxury) for all members of society (especially those who are failing to thrive and who are, thereby, least able to afford the care) is not a new one. Knowledge of its evolution should be helpful. Though some of the author's conclusions may not satisfy all readers, and though he tends to judge the past on the basis of present knowledge, there is no doubt that he will provoke his readers to question things they have previously believed to be self-evident and surprise them to find that our problems are not new ones.

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James Jackson Putnam and Psychoanalysis: Letters between Putnam and Sigmund Freud, Ernest Jones, William James, Sandor Ferenczi, and Morton Prince, 1877-1917. Edited with an introductory essay by Nathan G. Hale, Jr. Cambridge, Mass.: Harvard University Press, 1971, xiv + 384 pp., Port. $14.00.

James Jackson Putnam does not have the broad reputation of others in the beginnings of psychoanalysis, perhaps because he supplied neither outstanding nor flashy contributions to theory or technique. But his basic solidity, among other personality attributes, made him a significant figure. He was a sincere and thoughtful man of integrity who weighed carefully what he was doing, and Nathan G. Hale, Jr., helps much to perpetuate his good reputation. The book has an introductory essay by

Hale and 172 letters between Putnam and Sigmund Freud, Ernest Jones, William James, Sandor Ferenczi, and Morton Prince — 163 are published here for the first time.

Putnam felt at first that Freud's claims were stimulating but exaggerated. Then in 1908 he met Jones, and the following year Freud during his visit to Clark University. They corresponded after that and complimented each other. Putnam to Freud in 1912 (p. 147): "Your visit of three years ago was a more significant event to me than you can easily imagine, for it helped to change radically the whole course of my life and thought." A distinguished neurologist, Putnam was a founder in 1874 of the American Neurological Association and its president in 1888. In 1893 he became a full professor at Harvard. His first views of psychotherapy and various theories of neurosis were unfavorable.

Putnam was confronted in neurological practice by a wide array of sexual problems. "As a result of his conversations with Jones, Putnam reconsidered the two major hypotheses he had ignored or doubted — the importance of childhood sexuality and the persisting effects of early experiences" (p. 20). He became much involved in generating serious public hearings on Freud's work. The American Psychoanalytic Association was founded in 1911 and Putnam was elected president. He served in a similar capacity when the Boston Psychoanalytic Society was started in 1914. Freud, recognizing Putnam's importance and stature, worried lest he drift apart when the Adler and Jung defections occurred, but he stayed on while he observed developments with constructive criticism. Hale comments (p. 67): "It is possible that Putnam would not have taken up psychoanalysis without the influence of William James, whom he admired to the point of adoration." They were close friends since meeting at Harvard Medical School in 1866.

The correspondence with Freud is perhaps of greater interest than the others. Putnam to Freud (p 86): "Your visit to America was of deep significance to me, and I now work and read with constantly growing interest on your lines. In general I find myself in complete agreement with your ideas, except in some details, but I am looking forward to the day when I may venture to form an opinion of my own, with greater confidence." Freud to Putnam (p. 100): ". . . only you and only Boston could be the starting point for the formation of a psycho-analytic group to be joined by our friends in America . . . ." Some comments are quite personal. Freud to Putnam (p. 130): "I beg you not to attribute too much importance to Adler's concepts of organ inferiority, protest, and the desire to dominate because these are superficial, secondary and most often conscious. They do not touch the real forces at work. On the whole I see that you are suffering from a too early and too strongly repressed sadism expressed in over-goodness and self-torture. Behind the fantasy of a happy family life, you would discover the normal repressed fantasies of rich sexual fulfillment. It is the influence of these fantasies which causes the sense of physical dissatisfaction with one's wife. These are symptoms of aging, which I am beginning to experience myself, as I told you in Zurich." Putnam had previously written (p. 127): "I should say, in this connection, that my sexual relations with my wife have been rather infrequent for many years, of late exceedingly infrequent, and that I have 'dreaded' them . . . ." Freud to Putnam (p. 146): "I am now in trouble with our friend, Jung, who apparently has not outgrown his own neurosis." And later (p. 173): "I do not share your great respect for Adler's theories."

"Putnam regarded Jones as a brilliant, disciplined, and tireless young crusader, an opinion in which Jones doubtless would have concurred" (p. 205). And Jones comes through here in much the same way as in his three volume biography of Freud — biased and effective. The correspondence mentions his unfortunate problem in Toronto. "You will be grieved to learn that this week very serious personal trouble has arisen here: to put it quite shortly, a woman whom I saw four times last September (medically) has accused me of having had sexual intercourse with her then, has gone to the President of the University to denounce me, is threatening legal proceedings, and has attempted to shoot me. At present I am being guarded by an armed detective . . . . I foolishly paid the woman $500 blackmail to prevent a scandal . . ." (pp. 252-253).

Ernest Jones and Morton Prince did not agree on psychoanalysis and this, plus personality differences, was bound to spell trouble. Putnam to Jones (p. 262): "Prince is a fighter by nature and loves the rough and tumble of a battle for its own sake . . . . But Prince has strong virtues and much real generosity and public spirit." Jones to Putnam (p. 263): "The trouble with Prince is that the very qualities that made him so loveable personally, his boyish love of fighting and his irrepressible irresponsibility, are harmful factors for a man placed in the responsible and influential position he is." And then, on the financial impact of Putnam's interest in psychoanalysis (p. 287), Putnam to Jones: "Perhaps I should be earning a larger income if I had gone along the old paths, but that is another matter. (My practice just now is nothing to boast of.)"

The personal and professional references mingle also in the Ferenczi-Putnam correspondence. Ferenczi to Putnam (p. 312): ". . . Professor Jendrassik, a not unintelligent, but extremely vain person, whose own complexes render him hypocritical, had the book written; he likes paradoxes and therefore considers psychoanalysis to be paradoxical. He is struggling with a sexual complex and therefore is always trying to ferret out immorality in analysis. [A short time ago he married the mistress of a rich aristocrat, in spite of the fact that thereby he lost all social respectability. I do not blame him for this, but it is necessary to know these details in order to understand his kind.]"

The prodding and jabbing of Jones and Prince continues in the Prince-Putnam letters. Prince to Putnam (pp. 328-329): "Of course Jones has written to you as he has written to me, complaining of my treatment of him. His letter to me however is not only bitter but offensive, not to say insolent. However, I don't care. He is a nervous, highstrung, self-centered young fellow and takes everything one says as personal to himself. I do not know what he has written to you, but to me he makes a number of absolutely untrue statements of facts and charges regarding the publication of my reply . . . . Jones seems to think that he is at perfect liberty to criticise somebody and then to feel hurt if he is criticised in return. I call it crying baby and if he were five years of age he might be taken on one's knee and petted — or the other thing." And afterwards, about the psychoanalytic disputes, Prince to Putnam (p. 333): "Hold what theory you want. Freudian — Buddhistic Confucian or any other. Nobody cares a rap what theories a man holds. What scientists do care about — all men care about — is the mental method by which theories are arrived at. Freudians think that objectors object to the conclusions. The real fundamental objections are to the methods. You can hold to the most extreme sexual theories if you like and if your methods justify the theories, no criticism will hold. But if your methods are dictated by the attitude of mind you describe — then you are bound to suffer. As I have said before do let me implore you not to get so far involved with Jones and his crowd as to unconsciously slide into 'the attitude' — largely I am afraid from a mistaken sense of duty and loyalty."

Also of interest in this volume is the Forward prepared by Putnam's daughter, Marian C. Putnam. It is an appealing personal note centering on his fine qualities as a human being. And in relation to psychoanalysis, she quotes Freud on Putnam: "The esteem he enjoyed throughout America on account of his high moral character and unflinching love of truth was of great service to psychoanalysis and protected it against the denunciations which in all probability would otherwise have overwhelmed it."

This book supplies the reader with a behind the scenes view of some of the early development of psychoanalysis in the United States as well as an elaboration of better known facts, and serves as a good addition to the literature on psychoanalytic and psychiatric history.

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P. W. LAIDLER AND M. GELFAND *South Africa: Its Medical History 1652-1898.* A Medical and Social Study. Cape Town: C. Struik (PTY) Ltd., 1971. x + 507 pp. Ill.

The present work is the second general history of South African medicine to be published during the past dozen years or so. Paradoxically it is the older, having been almost completed in 1945 when the senior author, Dr. Percy Laidler, suddenly died from coronary disease. Fortunately it has now been carried to completion by Michael Gelfand, Professor of Medicine at the University College of Rhodesia, who has given us not only several valuable works on the contemporary medicine of tropical Africa but also on the medical history of the Rhodesias with emphasis on the tribal medicine and customs of the south-central Shona people.

Both of these histories of South African medicine cover the identical chronological period from the earliest beginnings of western exploration and colonization to the end of the nineteenth century but differ significantly. The earlier publication of Edmund H. Burrows (*A History of Medicine in South Africa,* Cape Town, 1958) followed rather conventional lines but interrupted the continuity of its narrative by introducing from time to time thumb-nail biographies of the principal, and often contentious, participants. The purely narrative history of Laidler and Gelfand, although often dependent upon the same primary sources, differs appreciably in paying much greater attention to social conditions and to the political and other factors leading up to events. Indeed the subtitle of the book is "A Medical and Social Study." Thus the two works serve to complement one another in providng a wide perspective of frontier medicine emerging into the progressive uniformity of the medicine of the twentieth century.

The fourteen chapters of the history take up in succession the five basic periods which have given South Africa and its medicine new directions. First is the Cape of Good Hope as "an inn for travellers to and from the East Indies," to use Thunberg's phrase of 1772. The absentee landlords of the inn were the seventeen all-powerful directors *(Heeren XVII)* of the United Netherlands Chartered East Indian Company (VOC in its Dutch abbreviation). This period contributes largely to the history and administration of nautical medicine in the eighteenth century. But more interestingly, we are able to follow the medicine of the increasingly disaffected pioneer colonists who were being slowly welded out of Dutch, German and Huguenot population into an independent people, the Afrikaner, united by a unique simplified language and defending their patrimonial rights against the officialdom of Batavian monopolistic mercantilism.

The second period is that of transition to British rule following the capitulation of the Cape in 1806 and with it the establishment of the Supreme Medical Committee which was to provide significant and exceedingly important new directions by reorganizing and regulating medical practice. Essentially the Cape was under military government because of its strategic importance. The British position was similar to that of the directors of the VOC who had instructed Jan van Riebeeck that in establishing the colony he was not to enlarge it beyond the limits of the Cape peninsula; an object which van Riebeeck thought to achieve by planting a great thorn hedge to separate the settlement from the rest of the continent.

The third period relates to the governorship of Lord Charles Somerset who, prior to assuming his responsibilities, had written in November of 1813 his first official letter to the Secretary of State for War and the Colonies pressing for a policy of emigration to increase the European population as recommended by Colonel Graham at the Cape. The authors refer to this as the "Barry Period" from the influence of Lord Somerset's protege, Dr. James Barry, whom they designate as "one of the most outstanding medical practitioners" and "one of the foremost social reformers" in the history of South Africa. The personal and dramatic story of the extraordinary James Barry who later achieved the highest rank in the British Army Medical Service as Inspector General and who on death was thought to be a female, is followed in detail with a discussion on which variety of intersex was represented. The authors appear to dismiss the suggestion of a "testicular feminisation syndrome" and oddly believe "that greater significance should be attached to the opinion of the charwoman" who viewed the body after death despite general experience with the unacceptability of lay opinion in these cases. Ignoring probabilities, they end up with no opinion at all but with a lame statement on modern requirements for a specific diagnosis. The informed opinion of his contemporaries and near contemporaries in the Army was that Barry was, in the language of the times, a case of hypospadias and therefore to be brought up as a male. However, most of the sources are obviously inadequate. Even Osler, who was interested in Barry, sadly confused the problem. The substantive contributions of James Barry in the control and improvement of standards in the practice of medicine are of far greater importance for the history of South African medicine than romantic speculation on his person. The authors discuss Barry's contributions very fully and are most informative on his remarkable dedication to his profession and his great administrative capacity.

An event of the greatest future significance during Lord Charles Somerset's governorship was the reversal of official British policy with the settlement in 1820 of the Zuurveld in the eastern Cape. The Government sought to solve two immediate problems by emigration; the postNapoleonic economic and political unrest in Britain and the strategic and economic problem of the eastern frontier, beset by Bantu invasions and tribal unrest from the northern conquests of the great and feared Zulu Napoleon, Shaka-*Nodumehlezi* (Sitting Thunder). The new religious humanitarianism spearheaded by overzealous missionary physicians such as Dr. John Philip, regarded either as the standard-bearer of virtue or the Machiavellian agent of the devil, served to complicate what was essentially the conflict of civilian and military needs under the most trying of frontier conditions in a violent and savage land. Conditions were analogous in many ways to the problems in the pioneering of Western America. The medicine of the 1820 settler period is consequently a mixture of military and civilian organizations. Of special interest was the establishment of the Frontier Medical School, the first medical school in South Africa, the purpose of which was to educate the tribal people and wean them from savagery and the witch doctor. The effort was eminently laudable but like so many such programs by this and other nations, doomed to failure from a lack of understanding of the depth of the cultural problem and tribal mystic. The medical history of this important region is diffused through several chapters and only a small part concentrated in a single place which makes the story difficult to follow unless one is familiar with local history.

The final chapters deal with the Great Trek and the medicine associated with the establishment of the Orange Free State, the Transvaal Republic and the Natal Colony followed by the Boer War. Because of conflicting political interests, administrative ambiguities of policy, the abolition of slavery, strategic and economic factors, it was a period of great complexity. Consequently the medicine of the period covers frontier, pioneer, military, marine, governmental and civilian medicine shouldering one another in various degrees of development over an interval limited in space and time; a medicine which in general terms was a repetition of the universal experience in new found worlds. Despite the difficulties of presentation, the authors do very well in untangling its complexities.

As a history of medicine in South Africa, Laidler and Gelfand's work gives excellent coverage and, although overlapping, it supplements Burrow's study very nicely in providing a different point of view with greater emphasis upon the background and political and social forces which to a large extent determined the various changes in medical directions. However, it is surprising, in view of Dr. Gelfand's well-known interests, that so little is said of the native medicine even of the Nguni, Sotho or Tswana Clusters, to say nothing of the more primitive Bushman or Hottentot. Surprisingly, neither the colloquial term Xhosa, nor AmaXhosa, IsiXosa, UmXosa, are to be found in the index. As a Xosa would say, "*Nalapho umi ngamlenze mnye* . . ." (They're only balancing on one leg.)

The period of Napoleon's incarceration on St. Helena was important in the economy of South Africa as the base of supply which might justify the introduction of Napoleon's medical problems and death. However the account is too brief to be very meaningful and contains in its short compass a number of inaccuracies. Thus, the authors imply that the lack of furniture in his residence caused Napoleon great dissatisfaction, whereas in fact, the Prince Regent ordered fine furnishings be expressly made for the comfort of the Emperor and his staff. The detailed report to the Prince on this matter is extant. The furniture was executed by no less than four hundred workmen so as to be finished in time and its high quality and gracious elegance made it a feature of Plantation House in St. Helena. It is equally surprising to read that at autopsy, the heart was found to be small, when the official report — signed by the five medical officers present — specifically says, "the heart was of natural size, but thickly covered with fat." The authors are critical of the suggestion that Napoleon had inherited his disease unaware apparently that Buonaparte had frequently declared he knew the nature of his disease, that it was hereditary, and that his father had died of it. But those imperfections are few and far between.

The work is evidently aimed at the South African reader familiar with the general outlines of its political history which in the case of colonial administrations has considerable influence upon social conditions and conflicting attitudes, medical or otherwise. But the readers unfamiliar with local history will find hiatuses difficult to bridge in following the continuity of the narrative. This is particularly evident in the discussions of the medicine of the frontier such as the necessary framework for an appreciation of developments in the Cisand Trans-Kei. It would be difficult from the account given to follow the succession of Kaffrarian wars or the fearful consequences to the life of the settlers and to Macoma and his tribe in 1834 of the Commissioner-General Andries Stockenstrom's Act in giving the fertile valley of the Kat River to Hottentots trained in the use of firearms. Likewise the account of the squabble between Lord Somerset and Pringle is confused and the distinction between the newspaper and the journal has not been drawn. It was more than the Edwards case that led to the clash. Pringle himself states that the governor and chief justice at their interview attacked not the newspaper but the article on the settlers in the second issue of the *South African Journal* which was denounced as "obnoxious," "radical," and "seditious." Further the authors state that "alas the journal was suppressed" which is not quite correct since the Dutch version, *Het Nederdeutsch Zuid-Afrikaansche Tijdschrift*, continued on uninterruptedly under the editorship of the Rev. Abraham Faure.

Drs. Laidler and Gelfand's history of South African medicine is a notable achievement and makes an important contribution to the general history of medicine and to world history during the period of exploration and colonization. The emphasis upon social conditions and their relationships to medicine should make it of more than provincial interest. The excellent documentation provides a point of departure and stimulus for the more detailed historical analysis by future scholars. It is in broader context a most useful tool for the development of a fuller inductive and comparative history of modern medicine.

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Guenter B. Risse (Editor). *Modern China and Traditional Chinese Medicine,* Springfield, Ill.: Charles C Thomas, 1973. viii + 167 pp.

This book presents a collection of nine papers delivered in a symposium on Chinese medicine at the University of Wisconsin in April 1972. Professor Guenter B. Risse, the organizer of the symposium, edited the papers with comments and added two Chinese reports.

It should be mentioned at the beginning that the title of the book is somewhat too broad and may be misleading. Actually the contents of the papers only deal with historical aspects of traditional Chinese medicine and the attempts to integrate acupuncture into a modern system of health care. The use of moxibustion and especially the role traditional drugs play today are mentioned only briefly. From the title, one might have expected to find more information on the current status of traditional medicine, e.g. the existence of and participation of traditional practitioners, the extent to which research is conducted on traditional drugs and its results, the question of special institutes teaching only traditional Chinese medicine and, finally, the utilization of traditional Chinese terminology as a rationale behind today's application of traditional drugs and methods of treatment.

The symposium focused on three areas: historical background, acupuncture, and health care delivery in modern China. Three papers of the collection deserve special attention:

The first part of the book is devoted to the philosophical, historical and sociopolitical aspects of traditional Chinese medicine. In view of the recent inundation of enthusiastic and to a large extent uncritical reports on the People's Republic of China and her achievements in the health care area, it is particularly necessary to establish a basis for understanding the contemporary situation. Professor Ralph Croizier's essay makes a contribution in this direction. He clearly elucidates the political and social factors which have influenced both the development of the complex traditional Chinese medicine since the middle of the 19th century and the formation of the modern Chinese health care system. In the process, the reader is shown how the different health-political positions of the nationalists and communists before 1949 and subsequently the "two lines" in the People's Republic are based on the impact of Western pressure which generated the resulting scientism and modern nationalism as well as the ideological differences.

The second part of the book primarily deals with acupunctural anesthesia. Dr. Norman Shealey's brief contribution towards an explanation of acupunctural anesthesia should be especially noted. Citing Western research in the area of pain mechanism theory during the 1960s and 1970s, he tries to establish a connection between Western scientific thought and this greatly misunderstood Eastern technique.

The third part of the book concerns the modern Chinese health care delivery system. Paul Pickowicz puts strong emphasis on the close connection between social and health politics. He describes the development of the paramedical personnel who are simultaneously admired and ridiculed in the West. The *Ch'ih-chiao i-sheng p'ei-hsun chiao-ts'ai* ("Instruction Manual for Barefoot Doctors"), Shanghai, 1970, provides the basis for his discussion. He includes the table of contents and a very brief analysis. Together with the most careful review of the *Nung-ts'un isheng shou-ts'e* ("Handbook of the Peasant Village Physician"), Peking, 1971, by Dr. Hans Agren in *Science* 178 (1972), 394-395, we now have a basis for a broader understanding of the education and knowledge of the "barefoot doctor."

Paul Pickowicz's informative discussion would have even more merit had he included one important observation: The Chinese see the paramedic as a temporary expedient to bridge the period of transition after which sufficient numbers of general practitioners trained in the new system will be available. In light of the current admiration for Chinese attempts to overcome the difficulties in their health politics it would be desirable if the questions P. Pickowicz poses at the conclusions of his paper regarding the relevance of the Chinese health policies to industrialized states received careful attention.

Seen as a whole, this book contributes to an understanding of the modern health care system of the People's Republic of China although it does not present many new facts and conclusions.

Reviewed by Ulrike Unschuld, Ph.D., Center for Chinese Studies, University of California, Berkeley, Calif.

THE BULLETIN RECENTLY RECEIVED*

Jacques Barzun (Editor). *Burke and Hare: The Resurrection Men.* A Collection of Contemporary Documents Including Broadsides, Occasional Verses, Illustrations, Polemics, and a Complete Transcript of the Testimony at the Trial from the Fenwick Beekman Collection at the New York Academy of Medicine. Metuchen, N.J.: The Scarecrow Press, 1974. xvi + 368 pp. Ill. $15.00.

Yvette Conry. *L'introduction du Darwinisme en France au XIXe siècle.* Paris: J. Vrin, 1974 (L'Histoire des Sciences, Textes et Etudes). 480 pp.

Allen G. Debus (Editor). *Medicine in Seventeenth Century England.* A Symposium Held at UCLA IN Honor of C. D. O'Malley. Berkeley: University of California Press, 1974. xiii + 485 pp. Ill. $15.00.

Donald J. D'Elia. *Benjamin Rush: Philosopher of the American Revolution.* Philadelphia, 1974 (Transactions of the American Philosophical Society, n.s., vol. 64, pt. 5, Sept. 1974). 113 pp. $5.00.

John Duffy. *A History of Public Health in New York City, 1866-1966.* New York: Russell Sage Foundation, 1974. xxi + 690 pp. Ill. $20.00.

Huldrych M. Koelbing. *Im Kampf gegen Pocken, Tollwut, Syphilis. Das Leben von Edward Jenner, Louis Pasteur, Paul Ehrlich.* Basel: Gute Schriften, 1974. 80 pp. Ill. Fr. 8. — (hardbound), Fr. 5.50 (paperbound).

Henry M. Leicester. *Development of Biochemical Concepts from Ancient to Modern Times.* Cambridge, Mass.: Harvard University Press, 1974. 286 pp. $15.00.

José López Piñero and Pilar Faus Sevilla. *Veinticinco siglos de medicina interna.. Exposición de textos clásicos de la Biblioteca de la Facultad de Medicina de Valencia.* Valencia, 1974. 48 pp. Ill.

——— *Exposición de textos quirúrgicos clásicos de la Biblioteca de la Facultad de Medicina de Valencia.* Valencia, 1974. 36 pp. Ill.

Harald Nielsen. *Ancient Ophthalmological Agents. A Pharmaco-Historical Study of the Collyria and Seals for Collyria Used during Roman Antiquity, as well as of the Most Frequent Components of the Collyria.* Odense: Odense University Press, 1974 (Acta Historica Scientiarum Naturalium et Medicinalium, 31). 117 pp. Ill. Dan. Kr. 40.

Florencio L. Pérez Bautista. *Sociedad y medicina en la novela realista española.* Salamanca: Universidad de Salamanca, 1974 (Cuadernos de Historia de la Medicina Española, Monografías, 27). 140 pp.

Clelia Pighetti. *Robert Boyle e la scienza virtuosa.* Ferrara: Universitè degli Studi, 1974 (Quaderni di Storia della Scienza e della Medicina, 13). 75 pp. Ill.

Walter I. Trattner. *From Poor Law to Welfare State: A History of Social Welfare in America.* New York: The Free Press; London: Collier Macmillan, 1974. xii + 276 pp. $3.95 (paperbound).

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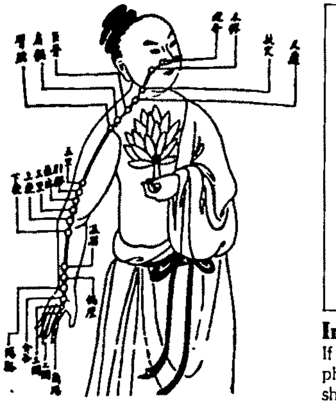

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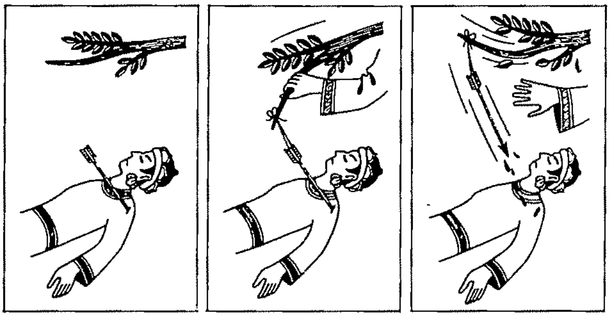

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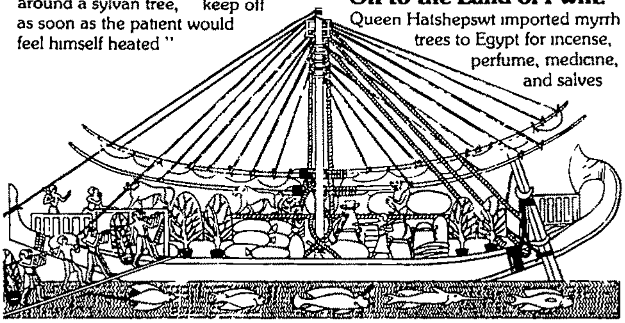

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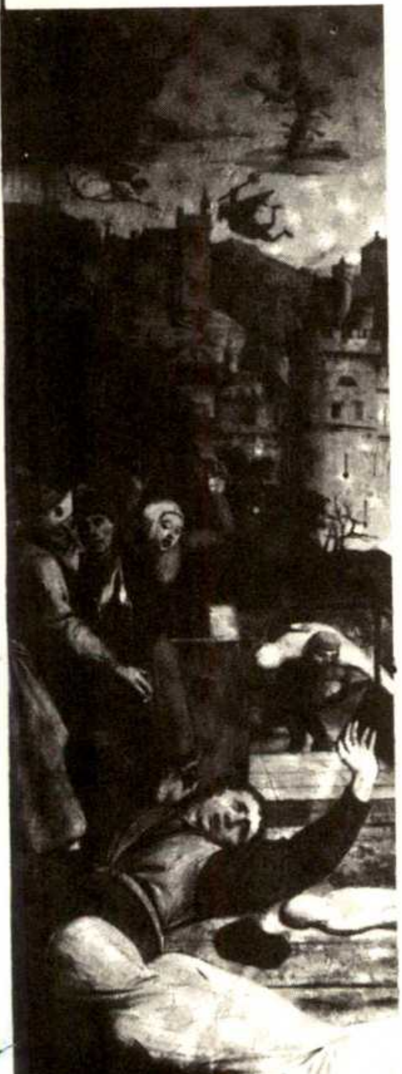

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ORGAN OF
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AND OF
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VOLUME 49 FALL, 1975 NUMBER 3

HISTORY AND PROPHECY: MEDITATIONS IN A MEDICAL LIBRARY*

OWSEI TEMKIN

The opening of a new medical library is an important event in the life of medicine. For a library is not only a gathering point for students, professors, practicing physicians, and others interested in medicine. It is also the point where past, present, and future meet. The library makes available knowledge accumulated up to the present day, knowledge that we assimilate with an eye to things to be done in practice or in research, be it today, tomorrow, or at some distant time.

Thus, a medical library is a monument to the Hippocratic aphorism: "Life is short, the art is long."[1] It is a monument to the short lives of those whose deeds and thoughts have passed into the stream of the medical art that flows on endlessly. If their names are forgotten, their minds are still present. Every textbook of physiology incorporates the ideas of William Harvey, even if the name of the discoverer of the circulation of the blood is not mentioned. We all try to leave our mark, to have something of ourselves pass into the future. We hate to think that we may have labored in vain, and that the future readers in the library will find no trace of us, not even an entry in a catalogue.

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* Address presented May 15, 1975, on the occasion of the dedication ceremonies of the Raymon H. Mulford Library of the Medical College of Ohio at Toledo.

[1] *Aphorisms* 1.1; *Hippocrates*, trans. by W. H. S. Jones (Loeb Classical Library), vol. 4, p. 99

Because we all have a share in the preservation of human thought, we recoil from the destruction of libraries and of books. Some thirteen hundred years ago, when the Arabs conquered Alexandria, the victorious general wrote the caliph, the religious head of Islam, asking what to do with the famous library. The caliph replied:

> Regarding the books you mentioned: If their content is consistent with the book of God, then the book of God suffices. But if their content is contrary to the book of God, there is no need of them. Therefore have them destroyed. Thus, Amr ibn Al‘ās began to distribute them among the baths of Alexandria, and to have them burnt in their fireplaces. The number of baths at that time was pointed out to me, but something has made me forget it. Then it is stated that the burning lasted over a period of six months. Hear what happened and be astonished![2]

The story is a legend, the library had been burnt before, and so thoroughly that few books could have remained. But the fact that such a legend arose at all, and that scholars have taken great pains to disprove it, shows how sensitive we are to the destruction of the documents of human aspirations and thoughts. The reason for our aversion has, I think, been well expressed by John Milton, when he wrote:

> who kills a man kills a reasonable creature, Gods Image; but hee who destroyes a good Booke, kills reason it selfe, kills the Image of God as it were in the eye.[3]

A medical library, then, spans past and future. It tells us not only what medical men thought was true and good for their times; it also allows us glimpses into what they thought the future held for them and for those after them. We are in a position to judge their predictions, to see whether they have come true or not, and to meditate on their prophecies.

Prediction is part of the physician's trade, only he calls it prognosis. The physician was sometimes associated with the soothsayer, with the difference that the physician's predictions were expected to be based on experience, those of the soothsayer on portents and on inspiration. But clinical signs were not always distinguished from magic portents or divine inspiration. One of the oldest of the ancient Greek poets invoked the Muses "with their songs, telling of things that are and shall be and that were aforetime."[4] Likewise, one of the Hippocratic books, written about 400 B.C., opens with the words:

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[2] Ibn al-Qifti, *Ta'rih al-hukama'*, ed by Julius Lippert (Leipzig: Dieterich, 1903), pp. 355,20 - 356,2

[3] John Milton, *Areopagitica*, ed. Hales (Oxford. Clarendon Press, 1904), p. 6.

[4] Hesiod, *Theogony* 37-38; *Hesiod*, trans. by Hugh G Evelyn-White (Loeb Classical Library), p. 81

> I hold that it is an excellent thing for a physician to practice forecasting. For if he discover and declare unaided by the side of his patients the present, the past, and the future, and fill in the gaps in the account given by the sick, he will be the more believed to understand the cases, so that men will confidently entrust themselves to him for treatment.

This is the beginning of the book which contains the famous description of the face of a man about to die, the *facies Hippocratica.*

> Nose sharp, eyes hollow, temples sunken, ears cold and contracted with their lobes turned outwards, the skin about the face hard and parched, the colour of the face as a whole being yellow or blackish.[5]

You will notice that for Hippocrates prognosis was directed not only to the future, but to the past and present as well. Ancient physicians were not identified by a diploma or a license; they had to gain the confidence of their clientele by being able to tell what was wrong and what had been wrong with the patient, data that could be verified. Something of this still lives on in us, if only in the joke of the man whom the dentist asked which tooth hurt, and who replied: You are the doctor, so you ought to know!

Of course, every physician knows that prognosis is full of uncertainties. Even the most experienced physician can err. In the same aphorism that I mentioned before, Hippocrates warned, "experience is treacherous."[6] Prognosis may be safer today, when there is less reliance on purely clinical experience and more support from experimental science with its abundant supply of laboratory data. But let me say that the Greek word in the Hippocratic aphorism that I just quoted as meaning treacherous can also be translated as "perilous" and experience as "experimentation," so that the aphorism takes on a different meaning: experimentation is perilous. Thereby the ancient commentators meant that trying out unknown remedies may be the patient's undoing.[7]

Indeed, we are inclined to attribute shortcomings in our ability to predict the future to imperfect knowledge, and this holds true not only with regard to the future of the individual patient, but of medicine as a whole. We do not yet know how to cure multiple sclerosis, as yet we have not conquered inoperable cancer, and so on.

When we say that we do not yet know something, we express our confidence that some day we shall know it. We take it for granted that it can be known, and that we have not yet progressed far enough on the road to discovery. This is an attitude shared by physicians and laymen. The layman indignantly asks his doctor: Why can you not cure this disease? To which, as you all know, the proper answer is: They have not yet found a remedy for it. It is reflected in the enthusiastic financial support given for an all-out fight against this or that disease. We are confident that a way can be found to eradicate it, and that given the means, that way will be found.

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[5] *Prognostic* 1 and 3; *Hippocrates,* trans. by W. H. S Jones (Loeb Classical Library), vol. 2, pp. 7 and 9 (slightly changed).

[6] Cf. above, n. 1.

[7] See Galen, Commentary on the Aphorisms of Hippocrates 1, in *Opera omnia,* ed by C. G. Kühn (Leipzig: Cnobloch, 1821-1833), vol 17B, pp. 353-354.

If due allowance is made for exaggerated zeal, which can lead to disappointments, we have every right to expect of scientific progress that it will lead to an increase in what can be done in medicine. The achievements of the last forty years confirm this clearly. To read the bare catalogue of all the discoveries and intentions that have been made since the introduction of the sulfa-drugs would alone take up the rest of the time at our disposal. If you will allow me to delve once more into my memories and the days of Latin tags: We used to define internal medicine as "circumstare et verba facere," "to stand around and make words." Even then, in the mid-twenties, that was not quite true: insulin had been discovered and liver diet in the treatment of pernicious anemia was proving helpful. But compared to the pace with which discoveries of new remedies now follow one upon the other, it was a time when progress was hoped for, but not yet counted on. I do not remember having heard any of my teachers tell us that prolonging the life of a hopelessly ill patient gave him the chance of living long enough to benefit by the discovery of an effective cure.

Nearly a hundred years ago a surgeon, a pioneer in the introduction of antiseptic surgery, remarked that the surgeon no longer was allowed to hope for a successful outcome of an operation; rather "he was the manufacturer from whom a good product was *demanded*."[8] Such a statement would not surprise us if made today. But having been made in 1881, it sounds more like a prophecy come true than a sober description of the prevailing state of affairs. Indeed, I think that a prophetic note was struck when the surgeon was compared to a manufacturer and, by implication, the public to consumers. The statement anticipated a future not only of great reliability, but of commercialized medical care.

I said that our confidence in predicting the outcome of individual disease and in the progress in the prevention and treatment of diseases rests largely on the greater precision that science has given to medicine. But our last example suggests that we must not think of natural science alone; we must include the social sciences as well. Highly personal as the relationship between doctor and patient is, it has its place within a framework of ever changing social and economic conditions. This is not only true of medical care administration in this country, it is also true of the worldwide effects of medicine. We are appalled at some of the consequences of modern medicine and public health for the population of underdeveloped countries. Mortality rates have dropped, but misery rates have not. Famine, malnutrition, and disruption of traditional ways of life tend to counteract the benefits medical science has brought. To some extent this might have been foreseen; and perhaps it actually did occur to some people. At any rate, it is a warning that medical science and social science have to go together, and that the predictive ability of both is needed.

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[8] R. Volkmann, *Die moderne Chirurgie*, [Paper read in 1881], in Sammlungen klinischer Vorträge, ed by Richard Volkmann, No. 221 (Chirurgie No. 70), p. 2

Thus far, our discussion has envisaged the kind of predictions that we make, and must make. We cannot live without predicting, without planning for tomorrow and relying on our plans' materializing. This is a truism for life in general. We are confident that we shall go to work, that we shall meet people with whom we have appointments; we resist the temptation to buy a packet of cigarettes because of the chances of developing cancer of the lung; we plan an operation and make sure that an operating room will be available; we plan an experiment and consider the consequences of positive and negative results; we participate in a conference on the medical curriculum—probably not for the first time—and wonder what the changes will mean for the next generation of physicians. We could go on and heap example on example, showing that we could not live without the firm belief that tomorrow the sun will rise and bring us another day.

We may overrate the knowledge we possess. Long ago, William Gowers, the famous British neurologist, remarked: "Our knowledge is enough to obscure our ignorance."[9] He was speaking about fainting, and you will remember that Gowers' syndrome is an eponym for the vasovagal attack. But I am afraid that Gowers' remark holds good on a much broader level. Till about ten years ago, it was fashionable to talk about preparing the world for the year, let us say, 1980 or even 2000. We thought we owed this to the future. We are no longer quite so confident that we have a clear picture of what will be needed. To give but one important example: the rate of increase in population has changed. The population explosion continues in some countries, whereas in others, particularly those of the industrialized West, it has abated. The population of the world or even of one country is a basic element in calculating what is needed and what can be done. We know some factors that have countered the steep increase in some countries: successful planning, simple and more reliable contraceptives, and, more recently, less favorable economic conditions. But I doubt that we are really capable of estimating the rise and fall of procreative desire, i.e. the wish to have many or few children. Moral and religious motives play a great role and who will be bold enough to calculate the moral and religious feelings of future man?

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[9] William R. Gowers, *The Borderland of Epilepsy* (Philadelphia: Blakiston, 1907), p. 1.

Bold enough or not, in this kind of prediction we no longer rely on knowledge, but on a vision of things to come. We have a very ambivalent attitude towards vision. On the one hand, we praise "a man of vision," and we blame a person for having a lack of vision. This is natural, because some degree of vision is needed for all we undertake. The person who buys a bottle of whiskey has a vision of the party he is going to give; and if a person of great vision, he also buys a bottle of aspirin for the ensuing hangover. On the other hand, we speak of a visionary in a derogatory way; visions dissociated from reality are abnormal—they belong to true prophets or to the mentally ill. We easily call a man a crackpot, if his visions seem fantastic to us. Perhaps we ought to keep in mind what some Englishman said about crackpots long ago: "They are certainly cracked, but the cracks let in light."[10]

However, I am not thinking here of either extreme: the trivial or the abnormally exalted. I am thinking of visions that guide man in science and in art. Three hundred and fifty years ago, the philosopher and mathematician Descartes had the vision of a mechanically determined world in which even man's body was nothing but a machine, the soul alone being capable of sensation and of will. This vision is still alive today: in spite of psychosomatic medicine, we have great difficulties in overcoming the dichotomy of body and mind. Paul Ehrlich, the founder of modern chemotherapy, had a vision when he searched for specific, chemically prepared drugs that would act like magic bullets against pathogenic micro-organisms.

From these examples of the tremendous power of vision, we now turn to a scrutiny of its role. Permit me to read to you the following passage from a medical address, without naming the speaker:

> The advances in our knowledge in medical science within the last forty years are without a parallel in any age. Never was the medical profession so busy and industrious, so zealous and enthusiastic, so honest and exact in its views and its results, as it is at the present moment. It would also seem as if the millenium were actually close at

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[10] J. Moreau (de Tours), *La psychologie morbide dans ses rapports avec la philosophie de l'histoire* (Paris, 1859), p. 205.

> hand. Look where we may, progress, rapid and brilliant, nay, absolutely bewildering, literally stares us in the face, and challenges our respect and admiration. One is almost ready to exclaim, "Behold, all things are new!"[11]

These lines sound like the praise so often given to the progress of medicine during the last forty years, since the introduction of the sulfa-drugs. Well; the speaker was Samuel David Gross, and the words are from the introduction to a course of lectures he gave at Jefferson Medical College in 1867!

What Gross here presented was also a vision, not of the future, but of his own time. How was it possible to be so enthusiastic about 1867, when our medical educational system was at a very low level, when surgery was hamstrung by the constant threat of infection, when even aspirin did not yet exist, leave alone X-rays, insulin, sulfa-drugs, the antibiotics, and the use of hormones and vitamins!

Gross—he lived from 1805 to 1884—was probably the greatest American surgeon of his time. He had witnessed the rise of pathological anatomy in Paris, London, Dublin, Vienna, and Berlin, and had himself written one of the best textbooks on the subject. Inhalation anesthesia had become available some twenty years before his address. Cellular pathology and experimental medicine were novelties. Put together, these and other items make us understand why Gross thought more highly of medicine in 1867 than we do. But it is, I think, fair to say that his vision of the contemporary status of medicine blinded him to its faults and weakened his perception of the future. Though he himself stated that "the materia medica has been purged of many of its crudities, and attained a more exalted position," he yet pointed to "a large octavo volume of upwards of seven hundred pages upon what are called new remedies," that a colleague of his had written.[12]

Whatever these new remedies were, it is safe to say that most of them have gone with the wind; not because they were all tried out and found wanting, but because modern pharmacology swept away innumerable drugs for which no other evidence than tradition could be cited. In 1867, Gross could not know the results of modern pharmacological science. But he lived in the days of strong therapeutic scepticism and even nihilism. Men like Oliver Wendell Holmes had come back from Paris with a deep-seated distrust of traditional therapy. Their teacher, Pierre Louis, had preached the gospel of the numerical method, i.e. of the statistically evaluated therapeutic trial. You have probably heard Holmes's often quoted remark "that if the whole materia medica could be sunk to the bottom of the sea, it would be all the better for mankind,—and all the worse for the fishes."[13] In Vienna, therapeutic nihilists had agitated for suspending all therapy, letting the patient have good nursing care, and for concentrating on scientific research that would create a reliable pharmacology. In 1872 the first volume of the German Archive for Experimental Pathology and Pharmacology appeared, the organ of the new experimental science of pharmacology.

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[11] Samuel David Gross, *Then and Now:* A Discourse Introductory to the Forty-third Course of Lectures in the Jefferson Medical College of Philadelphia (Philadelphia, 1867), p. 4

[12] *Ibid.*, p. 10.

Gross misread the signs of the time when, in his essay, he claimed that the statistical method was defunct, even though its founder, Pierre Louis, was still alive.[14] And in 1876, nine years after Lister had introduced antiseptic surgery, Gross wrote:

> Little, if any faith, is placed by any enlightened or experienced surgeon on this side of the Atlantic in the so-called carbolic acid treatment of Professor Lister, apart from the care which is taken in applying the dressing, or, what is the same thing, in cleaning away clots and excluding air from the wound; an object as readily attained by the "earth dressing" of Dr. Addinell Hewson of Philadelphia, and by oil dressing . . . which I have myself employed for many years, with signal benefit, in nearly all cases of wounds under my charge, whether the result of accident or design.[15]

Clearly, Gross had failed to understand the principle underlying Lister's use of carbolic acid. Was Gross then a short-sighted man? Not necessarily. His misjudgments show how easy it is to be right with the wisdom of hindsight, and how difficult when you are in the midst of new developments. When Gross took a dim view of the statistical method, he was in excellent company. Only two years before, Claude Bernard, in his *Introduction to Experimental Medicine,* had led a sharp attack on statistics as a source of medical knowledge. When Gross disparaged antiseptic surgery, he was probably guided by his own experiences. Surgeons who did not operate in crowded hospitals, where infection was rampant, who did not hurry from pathological autopsy to the operating room or to the delivery room, who were fastidious in washing their hands before an operation and careful in the attention they gave to their patients, had results that could compete with those of Lister. We praise Lister, who had applied Pasteur's germ theory to surgical infection, and we praise Semmelweis, who in 1847, on the basis of statistics, had proved that puerperal fever was an infection transmitted by the hands and instruments of the physicians, and who had advised washing the hands in calcium chloride solution. The results were there for all to see, but before Pasteur the scientific reasons for such successes were not clear. Thus, in Vienna, the slogan was coined: "Wait and wash!"[16] As to the germ theory itself: Robert Koch, the founder of modern bacteriology, was to show that no disinfectants would rid the hands completely of bacteria.

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[13] "Currents and Counter-Currents in Medical Science" in *Medical Essays, 1842-1882,* by Oliver Wendell Holmes (Boston and New York: Houghton, Mifflin, 1891), p. 203

[14] Gross, *Then and Now,* p. 34.

[15] Article "Surgery" in *A Century of American Medicine, 1776-1876,* by Edward H. Clarke et al. (Philadelphia: Henry C. Lea, 1876), p. 213.

The real history of medicine is much more complicated than we historians usually portray it in our textbooks. The vision of a genius needs a certain single-mindednes to cut through the bewildering, contradictory evidence of contemporary life; it needs a compulsion to follow the vision and thus comes perilously close to the monomania of the crackpot. Semmelweis called the obstetricians who disregarded his work murderers. To them in turn his zeal must have appeared that of a fanatic.

Gross, I think, illustrates the danger of being dazzled by too bright a vision of one's own time, for it breeds conceit and blinds one to possible cross-currents. Imperceptibly, the proud medical school of Paris began to be overshadowed by Germany with its strong scientific institutions. German medicine, in turn, was still basking in its own glory, when leadership was slipping away to this country. History becomes dangerous when misused for self-congratulation.

But let us turn from the vision of one's own time to that of the future.

In 1913, William Osler gave an address to the Yale students. This address, *A Way of Life,* is among his best known. He urged the young people to live "a quiet life in day-tight compartments," i.e. to do the tasks that were before them, rarely looking back to take stock, and not indulging in daydreams about the future. Life, so Osler thought, was "a straight, plain business," and he had a vision of the future of the students he addressed;

> In my mind's eye, I can see you twenty years hence—resolute-eyed, broad-headed, smooth-faced men who are in the world to make a success of life.[17]

But in 1914, the first World War broke out. It claimed the life of Osler's only son and, I am afraid, of many a Yale man who never lived to fulfill Osler's prophecy. To most people of that time, that war came as a great surprise, for the world seemed stable, progressing toward an ever better material and social life. A war, as barbarous as World War I proved to be, was almost unthinkable. We shall probably not be guilty of the same oversight as Osler, for we are accustomed to violence of all kinds, and we have long disabused ourselves of the idea that the world is bound to become more civilized. Does that mean that we are better prepared to have visions of the future that are not vitiated by the unforeseen? I doubt it, because guard as we may against the unforeseen, we cannot eliminate the unforeseeable.

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[16] Erna Lesky, *Ignaz Philipp Semmelweis und die Wiener medizinische Schule* (Vienna: Böhlaus Nachfolger [Kommissionsverlag der Oesterreichischen Akademie der Wissenschaften], 1964), p 51.

[17] "A Way of Life," in *A Way of Life, and Other Selected Writings of Sir William Osler* (reprinted New York· Dover, 1958), pp. 243 and 249.

In theory we all acknowledge the existence of the unforeseeable; it sounds trivial to insist on it. But in practice we disregard it again and again; rarely do we add an old-fashioned *deo volente,* if God will, to our plans. I have already mentioned the past fashion of preparing the world for what was to come in the year 2000.

Let us take a few examples of the unforeseeable. In 1491, nobody could foresee that in the next year a new continent would be discovered and that this discovery, together with that of the sea route to India, would create an economic revolution and a re-orientation of trade routes and commerce. All predictions made in 1491 for the state of the world in 1550 were bound to be wrong.

The invention of such instruments as the telescope and microscope around 1600 was another invasion of the unforeseeable; new instruments that made new regions accessible to our senses. With the aid of the telescope, Galileo showed the moons of Jupiter. Looking through this man-made tube with its lenses disproved finely spun theories. The same was true when the microscope showed organisms and organic structures that could not have been anticipated.

Just as we have become prepared for political upheaval, so also we have become accustomed to seeing new discoveries upset our medical theories. But that does not yet mean a ready acknowledgment of the unforeseeable.

In the 1970 edition of a leading textbook of pharmacology, we read, in the chapter on estrogens, of "a trial of diethylstilbestrol in doses as large as 2 g daily" during pregnancy. The author adds: "Although this form of treatment did not prove effective in toxemia, its harmlessness was reassuring."[18] Perhaps he was thinking only of late pregnancy; at any rate, in early 1971 the first report came in of vaginal cancer in girls between fourteen and twenty-two years of age, most of whose mothers had been treated with this drug in early pregnancy.[19] Who could have predicted this? Neither animal experiment, nor the usual clinical trial, nor an early epidemiological survey of a drug will indicate effects that will reveal themselves decades later. Only what I like to call "the historical trial" will eventually record what drugs do, and do not do.

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[18] Louis S Goodman and Alfred Gilman, *The Pharmacological Basis of Therapeutics*, 4th ed. (New York Macmillan, 1970), p. 1547

[19] Arthur L. Herbst et al., "Adenocarcinoma of the vagina," *New England Journal of Medicine*, April 22, 1971, *284*:878-881.

I call such trials "historical," because the word implies that they are made a considerable, yet undetermined, time after the drug has come into use. And as history is constantly rewritten, it is in the nature of the historical trial that its results may also vary at different times. Its only drawback is that the patients too may have departed into history long before the trial takes place.

Visions need not be either true or false. There is perhaps no better example of the truth *and* fallacy of vision than that offered by Daniel Drake in his *Principal Diseases of the Interior Valley of North America*. This is one of the very great works on medical geography; it describes what we now call the Middle West, its geographic and climatic features, its inhabitants and their cultural characteristics and, as the title says, their diseases. After seven hundred pages of descriptive text, Drake pauses. "All peculiarities of constitution, both corporeal and mental," he thinks, "exert a modifying influence on disease." The peculiarities are as yet not fully developed, but we may infer the effects which will appear in full development to "our distant successors." And so Drake ventures upon a grandiose assessment of what he sees going on and presents a vision of what will come to pass.

> A synthesis of varieties and races is going on; and the result, I may here repeat, must be a new national constitution—physical and mental—of which the Anglo-Saxon, itself a compound, will be the basis and the governing element.[20]

Until about twenty years ago this could be called a prophecy come true. It was a superb anticipation of America as "the melting pot" of peoples of different nationality, moulded into a nation with its own physiognomy and led by the Anglo-Saxon element. Following the example of my teacher, Henry E. Sigerist, I presented this passage to my students as one of the great visions in American medicine, seen by a man who embodied the pioneer spirit of his time, who had real insight into its historical meaning. Were we right?

Dr. Sigerist died in 1957; until then, Drake's vision could still be considered a true prophecy of what his "distant successors" would see. But we here in 1975 are even more distant successors, and to us Drake's vision no longer seems indisputable. The slogan of "the melting pot" is less frequently used now, when much weight is placed on ethnicity, and the Anglo-Saxon element considered one among others.

Alerted by this consideration, let us continue with Drake's words. He admits that the diseases of the future "under the joint influence of mingled blood, of climate, water, occupations, modes of living, customs, and moral, social, and political influences, cannot be specified." Again, let us admire the sweep of his mind, the wide range of factors he took into account 125 years ago, long before sociology had become fashionable and "ecology" a slogan. I wish he had stopped on this negative note. But Drake was a courageous man who, in his turbulent life, had fought many battles. And so he hazarded a few predictions, few of which have come true to date. He foresaw a decrease in "autumnal fevers," and, as far as this meant malaria, he was right. But he thought that typhus and typhoid fevers would become more prevalent—which they have not. "Consumption and scrofula will increase"; perhaps they did for a short time, but they began to decrease before the end of the nineteenth century, and scrofula, i.e., tuberculous lymphadenitis is, I believe, rarely seen. The last of the seven predictions is of special interest: "Mental alienation will be more frequent." Judging by the number of patients in mental hospitals and under psychiatric care, this is certainly true. But to a large extent this is a consequence of much greater attention given to even minor mental deviations. One of the main scourges of the nineteenth century, general paralysis, a late form of cerebral syphilis, has diminished dramatically.

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[20] Daniel Drake, *A Systematic Treatise, Historical, Etiological, and Practical, on the Principal Diseases of the Interior Valley of North America*, vol. 1 (Cincinnati: Winthrop B. Smith, 1850), p 701.

As the example of Drake shows, prophecies have a life of their own. Unless cast for a particular year or a particular day, their validity depends very much on when, and by whom, they are judged. Historical judgments vary; this is true not only of Drake's vision, but of others as well. The Reverend Cotton Mather, notorious for his role in the Salem witchcraft trials, wrote a book that he called *The Angel of Bethesda,* a peculiar mixture of puritan theology and medical ideas very new in his time. Regarding the latter, he dealt at length with the animalcular theory of disease. Oliver Wendell Holmes, who had read the manuscript, took a dim view of the book and remarked: "It is well that the treatise was never printed."[21] He acknowledged Mather's role in the introduction of variolation, the forerunner of smallpox vaccination.[22] But the animalcular theory of disease did not impress him.

In 1869, the year of Holmes' lecture, animalcular theories of disease were still considered fantastic by many of those who could not follow Pasteur. Now, however, Cotton Mather is praised as a man of remarkable vision,[23] and

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[21] "The Medical Profession in Massachusetts," in *Medical Essays* (see above, n. 13), p 360

[22] *Ibid* , pp. 362f

[23] See Otho T Beall, Jr. and Richard H. Shryock, *Cotton Mather: First Significant Figure in American Medicine* (Baltimore: Johns Hopkins Press, 1954), especially pp. 87-126.

The Angel of Bethesda has found its way into print.[24] Indeed, "books have their fate according to the comprehension of the reader."

With this final quotation from an ancient grammarian,[25] we may end our meditations, our rambling thoughts evoked by old books and old sayings. A medical library, and especially a rare book room, is a good place to meditate. The busier our daily life, the more intent we are on gathering information, the greater the need, I think, for occasional consultation of medical men of the past. If we approach them, not as representatives of imperfect knowledge and of a dead science long overcome, but as human beings who were as alive as we are, and who hoped for the future as we do, they will speak to us. And what do they tell us?

Allow me to give a personal answer. People who hear that I am a historian of medicine sometimes say that they prefer to look forward, to the future. But, I think, the historian also looks to the future, he wants to know what predictive power we human beings possess, and he thinks that past experiences are enlightening. They can help us not to venture forth foolhardily, nor to lose courage if our expectations fail to be realized—in short, to develop a feeling for the fate of human affairs. As Milton said:

> Many a man lives a burden to the earth; but a good Booke is the pretious life-blood of a master spirit, imbalm'd and treasur'd up on purpose to a life beyond life.[26]

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[24] Cotton Mather, *The Angel of Bethesda*, ed. by Gordon W Jones (Barre, Mass.: American Antiquarian Society and Barre Publishers, 1972)

[25] Terentianus Maurus, *De syllabis*, in *Grammatici latini*, ed by Heinrich Keil, vol 6 (Leipzig: Teubner, 1874), p. 363: "Pro captu lectoris habent sua fata libelli."

[26] Milton, *Areopagitica* (see above, n 3), p. 6.

AGENCY PHYSICIANS TO THE SOUTHERN PLAINS INDIANS, 1868-1900*

VIRGINIA R. ALLEN

The image of the American Indian, as a free warrior astride his horse, has endured for many years—a figure frozen in time by books, movies, and television. A recently awakened conscience has caused Americans to reevaluate their unjust treatment of racial minorities. In an attempt to purge our guilt, we now tend to recognize nothing good in our relationships with these peoples. However, research of the medical care of the Southern Plains Indians reveals that there were positive aspects of the Indian-White encounter.

The Medicine Lodge Treaty of 1867 completely altered the way of life of the Southern Plains Indians. This Treaty assigned these tribes two reservations in Western Indian Territory, where they were expected to adopt the agricultural life style of white pioneers. It stipulated that the Federal Government would provide certain personnel, including physicians, to assist in their transition. The Southern Cheyennes and Arapahoes were given the northern portion of the area and the Kiowas, Comanches, and Kiowa-Apaches the southern.[1]

The position of agency physician was one of the most important appointments at an Indian agency. The physician had several vital duties: supervising agency sanitary conditions, treating the ill, and providing a unique contact with white culture. The cultural differences added to the complexity of the doctor's tasks. Doctor O. B. Given of the Kiowa-Commanche reservation summarized the significance of the physician's assignment:

> Next to feeding a man when he is hungry I think that curing him when he is sick ranks next in importance in gaining his confidence and respect. So I regard the work of the physician at an Indian agency one of no small importance. . . .[2]

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* Presented at the 47th annual meeting of the American Association for the History of Medicine, Charleston, South Carolina, May 3, 1974. Research for this paper was supported by NIH Grant LM 01396 from the National Library of Medicine and the Oklahoma Medical Research Foundation. Much of this material also appears in the author's unpublished Ph.D dissertation, Oklahoma State University, 1973, "Health and Medical Care of the Southern Plains Indians, 1868-1892," Chapter III.

[1] The Wichitas and affiliated tribes (principally Caddoes and Delawares) who were displaced from this area during the Civil War were assigned a portion of the Kiowa-Comanche reservation. These tribes had a separate agent from 1867 until 1878, when they were consolidated with the Kiowa-Comanches.

When Congress terminated treaty-making in 1871, at least two dozen treaties provided for some type of Indian medical care. The first central administrative control of Indian medical services began in 1873 with the establishment of a Division of Education and Medicine in the Bureau of Indian Affairs.[3] The Division organized central reporting and distribution of medical supplies. Indian Service doctors were required to possess a medical degree after 1878. The medical corps of the Indian Bureau had, in 1888, eighty-one doctors serving over 200,000 Indians. An extension of Civil Service classifications in 1891 included agency physicians and raised their entrance requirements.

An Indian Bureau bulletin listed the qualifications and duties of agency physicians. To be eligible, the applicant was required to be: a "regular graduate" of a reputable medical college and actively engaged in the practice of medicine; between twenty-five and forty-five years of age; temperate, active, industrious, in sound health; and "to possess a good personal and professional character."[4] Married men were preferred over single men. Engaging in private practice or other business outside the agency was prohibited. Duties of the physician included: overcoming the influence of the medicine man; treating Indian patients who called at his office and those who remained at camp; giving instruction in hygiene; acting as public health inspector; making regular visits to the Indian schools to treat students and instruct them in basic physiology and hygiene; and making monthly sanitary reports to the Indian Commissioner and quarterly reports of medical property to the agent. The bulletin defined the relationship of the agent and the physician:

> Harmony is essential to the proper conduct of an agency and the physician, though appointed directly by this office, must treat the agent with proper respect, promptly and cheerfully obeying all orders issued him.[5]

Agents sometimes complained that it would be impossible to fill a position with so many disadvantages for a salary of $1,200 annually. However, the salary compared favorably with the average annual earnings of American physicians. Estimates of yearly incomes range from $400 immediately fol-

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[2] Sanitary Report, June 1876, Kiowa-Comanche Doctors File, Indian Archives Division, Oklahoma Historical Society, Oklahoma City. Hereinafter cited K-C Doctors, Indian Archives, Okla. City.

[3] Ruth M. Raup, *The Indian Health Program from 1800-1955* (Washington. U S. Public Health Service, Division of Indian Health, 1955), p. 2

[4] "Synopsis of Qualifications and Duties of Agency Physicians," K-C Doctors, Indian Archives, Okla. City

[5] *Ibid.*

lowing the Civil War to $750 near the turn of the century.[6] There were usually numerous applicants for service in Indian Territory, a more desirable location than many other reservations. During this period, a surplus of medical practitioners existed, especially in the rural areas.[7] The depression of 1873 and the agricultural and ranching failures of the 1880s were keenly felt by the medical profession. The application letter of one doctor, in 1875, reveals the attractiveness of a regular government salary. He wrote that since the termination of his service as a Civil War military surgeon, he had not expected to resume any government affiliation; however, he explained, "on account of financial changes I have tho't it best to seek a position under the government again."[8]

The applicants for the position of agency physician ranged in age from the middle twenties to the late fifties. Many young medical school graduates saw the position as an oportunity to gain valuable experience while receiving a guaranteed income. Their educational background varied from no college training, to degrees from Harvard and Oxford. Many who applied had been military surgeons during the Civil War. The personalities of the physicians were as divergent as those of any other group of frontiersmen. The Quaker doctors entered their service with a sense of religious mission and devotion to duty. Like other pioneers, some were influenced by wanderlust. One graduate of Oxford University applied because he wanted "to see a little frontier life and save some money."[9]

During the 1880s there were numerous applicants from the adjoining state of Kansas. Hard times had fallen on American agriculture during that decade. In the 1870s railroad land promotion and favorable weather for agriculture had lured many people to the West. Land speculation boomed. Then, in 1887, the land price collapsed, interest rates in Kansas rose from eight to twenty-four percent, and by 1893 there were 11,000 mortgage foreclosures.[10] In such circumstances, a secure government job among the Indians became desirable.

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[6] William G. Rothstein, *American Physicians in the 19th Century* (Baltimore: The Johns Hopkins University Press, 1972), p. 205, A. L. Blesh, "What of the future," *Oklahoma Medical News-Journal*, June 1904, *12*(6) p. 141

[7] Richard H Shryock, *Medicine in America. Historical Essays* (Baltimore: Johns Hopkins University Press, 1966), p. 156.

[8] Dr. J. F. Everhart to John Miles, Aug. 5, 1875, Cheyenne-Arapahoe Doctors File, Indian Archives, Oklahoma Historical Society, Oklahoma City. Hereinafter cited as C-A Doctors, Indian Archives, Okla. City.

[9] Dr. D. MacMillan to John Miles, June 11, 1881, C-A Doctors, Indian Archives, Okla City.

[10] Fred A. Shannon, *The Farmer's Last Frontier. Agriculture, 1860-1897* (New York: Harper & Row, 1968), p. 313. Nine-tenths of the land in some counties changed hands

All of the doctors who came to Indian Territory, regardless of their other qualities, must have possessed some pioneering spirit. Indian Territory seemed almost an alien land, with the rest of the country commonly referred to as "the States." During the early days, the agencies could be reached only by wagon or stage over rutted wagon-roads and across changeable streams. At Darlington, the Cheyenne-Arapahoe physician's accommodations and office were fairly adequate, but at Anadarko on the Kiowa-Comanche reservation they were unsatisfactory. If the doctor had a family, the cultural and educational opportunities for his children were limited, and opportunity for his own intellectual growth was restricted. Contact with the outside world was a buckboard mail-wagon twice a week.

The medical service on these reservations can be divided roughly into three periods: the Quaker administration, 1868-1880; appointment through the spoils system, 1880-1891; and Civil Service control after 1891. President Ulysses Grant in 1869 gave the Executive Committee of the Society of Friends authority to administer certain agencies, including the Southern Plains Indians. After the 1877 inauguration of President Rutherford Hayes, the Bureau of Indian Affairs refused to cooperate with the Friends, who consequently severed their affiliation with the Indian Service. Political influence then became the most important factor in securing an appointment. A large turn-over of agency personnel occurred during the Cleveland administration—the first opportunity since the Civil War for Democrats to cut the political pie. After Civil Service took over in 1891, neither political party had much success in replacing agency physicians.

The Quaker physicians served during extremely troubled times. The tribes had great difficulty adapting to the new life thrust upon them. There was confusion and dissension among tribal members and sporadic warfare occurred until all warring bands were finally subdued in 1875. The demoralized and disillusioned people suffered from malnutrition, disease, and despair.

The physicians themselves were twice focal points of the violence of the times. The son of Doctor Jason Holloway, Quaker physician and missionary to the Cheyennes and Arapahoes, was shot without apparent motive. Two Indians on horseback fired through a window at young Holloway who was visiting a sick friend.[11] Neither Doctor Holloway nor Doctor Fordyce Grinnell, who was summoned from the adjoining reservation, was able to locate the bullet lodged in the thoracic cavity. The best the father could do was to make his son as comfortable as possible until he died four days later. Recurring hostilities caused the doctor to send his family to Kansas in 1875. Doctor Holloway, fatigued and disillusioned by government failure to provide adequate medical supplies and facilities, joined them in 1876.

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[11] Dr. Holloway to Orlando Holloway, June 3, 1874, Holloway File, Archives, Carnegie Library, El Reno, Oklahoma.

Doctor Edward Palmer, first physician at the Kiowa-Comanche reservation, became involved in a dispute with the agent over Palmer's practice of sending botanical specimens to the Smithsonian Institution. As a result of their disagreement, the agent dismissed him. The Indians were already suspicious of Doctor Palmer because many of their people had been ill since arriving in Indian Territory. The tribesmen declared he was a "bad medicine man." When they questioned the agent about the doctor, he unwittingly confirmed their superstitious belief by replying that Palmer had been discharged because he was a "bad medicine man, using bad medicine."[12] The Indians were incensed and decided on revenge. A group of Kiowas and Comanches sought the doctor, who was staying temporarily at a Wichita camp. Fortunately, Palmer and the Wichitas were forewarned and fled. Such violence and confusion were manifestations of the stress and cultural conflict within the tribes, and illustrate the problems often encountered by physicians treating people of another culture.

The conflict between traditional Indian beliefs and Western medicine contributed to the many problems faced by agency physicians. Traditionally, the medicine men were responsible for both the physical and spiritual health of their people. Some native doctors were very skillful in dealing with battle wounds and broken bones. Others successfully treated ailments with empirically derived techniques and herbal remedies. They provided the only health care for Indians in camps isolated from the agency. It was the religious aspect of the medicine man's treatment, plus his association with tribal tradition, that gave his "medicine" psychotherapeutic advantages. The multiplicity of roles played by the native doctor—priest, wise counselor, country doctor, and tribal historian—assured him a significant role in tribal society and inspired confidence in him. For many Indians suffering from cultural shock, the medicine man provided a focal point from which they could reestablish their own sense of identity. White officials saw the medicine man as a principal barrier to acculturation and abandonment of the traditional Indian way of life. They directed the agency physicians to report periodically their progress in overcoming this "evil influence." Most physicians reported simply that there was an increase in confidence in the agency physician over the medicine man. The physicians used the size of their own caseloads to justify the generalization. It was impossible for the doctor to calculate the proportion as the Bureau requested, because he had no way of knowing how many consulted the tribal practitioners.

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[12] Dr. Edward Palmer to Commissioner of Indian Affairs, June 10, 1868, National Archives, Office of Indian Affairs, Letters Received Kiowa Agency, Microcopy 234, Roll 376, No. 968.

Traditional beliefs often interfered with effective medical treatment of the Indians. The agency doctor sometimes encountered a fatalism which was virtually impossible to overcome, especially among the older people. Some believed that if it were the time to die, there was no escape. Doctor Irving Smith, endeavoring to vaccinate the Kiowas and Comanches, was disappointed that many Comanches refused because they believed that, if the Great Spirit chose to send death, they were obligated to submit to His will.[13] These attitudes impeded the physician's efforts to solve health problems. Frequently, the Indians sought aid from the native doctor first and consulted the agency physician as a last resort. They tended to seek the white doctor initially for illnesses which were readily relieved by the physician's remedies; the best example is malaria.

There were many problems to plague a conscientious agency physician. The lack of treatment facilities, drugs, and instruments often rendered the best doctor ineffective. Every doctor sent repeated pleas to Washington for a hospital or an adequate dispensary, but to no avail. In 1878, Doctor Smith complained he lacked the most basic medical instruments. He stated that the dispensary did not have an efficient cutting instrument or a stethoscope.[14] He requested a thermometer that could be read in the dim light of an Indian lodge—the only one at the agency could barely be read in the best light.

Supplies were a special frustration. Quinine, the doctor's most important remedy, was often not available. Although malaria caused much suffering, it was also the disease which most vividly showed the power of the white man's medicine. The native doctor had no remedy for it, but a gravely ill patient made a rapid recovery when given the white doctor's medication. The Indians considered this, "big medicine, heap good." Doctor Lawrence A. Hodge, who served the Cheyenne-Arapahoes from 1876 to 1881 and 1882-83, stated that the first year in which he received adequate medical stores was 1880, but shortages persisted in succeeding years.[15] The lack of quinine was a major problem during the late 1870s when malaria was prevalent and unusually severe. Supplies which were inadequate for normal usage were quickly exhausted. During one peak malaria month, Doctor Hodge had to close the dispensary after his quinine supply was depleted. He turned away over one thousand applicants for medicine.[16]

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[13] Sanitary Report, July 1878, K-C Doctors, Indian Archives, Okla City.

[14] "Estimate for Medical Supplies," June 30, 1878, K-C Doctors, Indian Archives, Okla. City.

[15] Shortages and the late arrival of medical stores were chronic problems during the reservation years

Heavy caseloads, especially from late summer through early winter, exhausted even the younger doctors. Doctor Hodge, who was twenty-nine when he began service, considered resigning after three years because the heavy schedule was physically debilitating. Hodge began his tenure by treating 386 patients during the first six days, and more than 2,000 the following month. Later, he often treated 1,000 to 1,500 patients a month.[17] Hodge reported in a local newspaper that he wrote 12,000 prescriptions during 1880.[18] Ill health caused him to resign in 1883. At the other reservation, Doctor Smith's caseloads were comparable, ranging from 300 to 1,000 per month.[19]

In addition to seeing the Indian patients who reported to his office, the agency doctor was expected to visit outlying camps. This duty was difficult and time consuming. Many of the Indians remained in small nomadic bands, sometimes camping as far as 80 to 100 miles from the agency office and often 40 miles away. The doctor's only means of transportation was either a buckboard wagon or horseback.

One of the outstanding Quaker physicians appointed to serve in western Indian Territory was Doctor Fordyce Grinnell. A recent graduate of Miami Medical College of Cincinnati, he came to the Kiowa-Comanche reservation in 1873. Doctor Grinnell's genuine concern for the Indians was evident in his persistent requests for a hospital and adequate medical supplies, and in his general attitude toward them. His monthly sanitary reports usually contained accompanying remarks which more fully explained the needs and problems of the Indians. He made periodic visits to the Indians in their camps, whether called or not, to determine their condition and needs. In addition to discharging his duties as physician and religious leader, the doctor found time to write about Indian customs and history for the Bureau of American Ethnology and to contribute medical articles to the *Cincinnati Lancet and Observer*. From Indian Territory, he wrote: "The Healing Art as Practiced by the Indians of the Plains," "The Indian Question from a Medical Standpoint," "Iodine a Substitute for Quinia," and "Removal of the Lower Portion of the Left Lung."[20] While serving later at the Sioux reservation, he also contributed "The Sioux Sun Dance."[21] Doctor Grinnell's articles reveal his understanding of Indian problems, and also indicate that his education included both medicine and the classics.

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[16] Sanitary Report, Aug 1878, C-A Doctors, Indian Archives, Okla City.

[17] Sanitary Reports, 1879-1880, C-A Doctors, Indian Archives, Okla. City

[18] *The Cheyenne Transporter*, April 24, 1880, vol i, No 8, Newspaper Division, Colorado Historical Society, Denver, Colorado

[19] Sanitary Reports, 1877-1880, K-C Doctors, Indian Archives, Okla. City

[20] Vol 17, pp. 145-147; vol. 21, pp. 157-169; vol. 40, p. 145; vol. 40, pp. 187-188

One of Grinnell's articles concerned an example of early lung surgery. Two Indian boys were playing their version of cowboys and Indians, when one was accidentally shot with an arrow. The boy immediately withdrew the arrow dragging a portion of his lung with it. After the treatment of a medicine man failed to help, the parents brought the boy to Doctor Grinnell. When he saw the patient, the exposed lung already had the odor of decay. Grinnell administred chloroform, excised the herniated lung, and returned the stump to the pleural cavity after washing it with perchloride of iron. The boy was soon back at play after an uninterrupted recovery with minor suppuration.

Doctor Grinnell remained at the agency for five years. Later he served at the Pine Ridge Sioux Agency and Carlisle Indian School.

Doctor William F. Harvey, who served the Cheyenne-Arapahoes for a few months in 1881, also contributed to *The Cincinnati Lancet and Clinic.* One treatise, "Epilepsy—Two Cases—Indians," was written immediately after he left the Indian Service.[22] One of the cases reported was that of a young Arapahoe who suffered a severe concussion with bleeding from both ears after falling from his horse. Within three weeks he was walking; complete recovery from the apparent skull fracture followed catharsis, bromides, and other non-surgical measures. In a later communication Harvey expressed his ideas on "Germs."[23] Like many physicians of his time, he was skeptical of the new bacteriology and repudiated the theory that bacteria could produce disease.

There was little change in agency personnel immediately following the withdrawal of the Society of Friends, but the long-awaited Democratic victory in the election of 1884 resulted in agency appointments becoming political spoils. Letters from applicants contained many recommendations from senators, representatives, governors, and lesser political officials.[24] The first political appointment of the Cleveland administration to the Cheyennes and Arapahoes, Doctor S. E. Givan, had the shortest tenure of any physician—eight days. Immediately after arriving at the agency he became intoxicated and remained in that state. The agent promptly suspended him pending a department investigation. The doctor, however, preferred not to wait for the inquiry and left immediately.

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[21] Vol. 46, pp 33-34. The name of the journal was changed to *The Cincinnati Lancet and Clinic.*

[22] *Ibid.*, vol. 48, p. 145.

[23] *Ibid.*, vol. 52, p. 502.

[24] C-A Doctors and K-C Doctors, Indian Archives, Okla. City and National Archives, Office of Indian Affairs, Letters Received.

Doctor Givan's predecessor, Doctor J. F. DeBra, was unhappy about being replaced and fought to keep his appointment. DeBra wrote the new Indian Commissioner, J. D. C. Atkins, that although he had been appointed during Arthur's administration, he had "always been a Democrat and voted and supported the Democratic principles for the last twenty-five years."[25] He assured the Commissioner that the only reason he was appointed during a Republican administration was to relieve the urgent need at the agency for a physician. DeBra noted that in the spirit of service he had relinquished a good practice to care for the Indians.

DeBra's efforts to keep his appointment failed and he was replaced by Doctor J. W. Gray, who was transferred from the Sioux Agency at Pine Ridge. In a short time, Gray requested a transfer from Indian Territory to Albuquerque, New Mexico, because he found the Darlington climate unhealthy and the agency an undesirable place to live.[26] When political fortune changed and power passed back to the Republicans, Doctor DeBra attempted unsuccessfully to share the Republican spoils. After leaving Indian Territory he had settled in the Republican state of Kansas, and sought the help of Senators Preston B. Plum and John J. Ingalls in securing another appointment. The embittered doctor must have changed parties at his new residence, because he then was described as an "uncompromising Republican."[27]

During the first Cleveland administration, Texans, who had been in disfavor because of Confederate affiliation, received several appointments at the Kiowa-Comanche Agency. Secretary of the Interior L. Q. C. Lamar appointed fellow Texans to the important posts of agency physician and agent. The physician, Doctor William Graves, a friend of the Secretary and of Senator Richard Coke, noted among his qualifications that he had received two surgeon's commissions from that "grand Patriot and sage, Jefferson Davis."[28] His tenure was clouded by scandal which resulted in the dismissal of the agent and implicated the doctor as the source of intoxicants used by two school superintendents.[29] He was exonerated by the special agent investigating the case, and Graves remained two more years, until political power in Washington changed again.

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[25] May 8, 1885, National Archives, Office of Indian Affairs, Letters Received 1885, no. 10741.

[26] Gray to Indian Commissioner, Sept. 22, 1886, National Archives, Office of Indian Affairs, Letters Received 1886, no. 25899.

[27] June 25, 1889 and July 13, 1889, National Archives, Office of Indian Affairs, Letters received 1889, nos 19095 and 20951.

[28] Graves to Lamar, Aug. 27, 1885, National Archives, Office of Indian Affairs, Letters Received 1885, no. 20795.

Doctor George Westfall, probably the best trained of the physicians serving the Cheyenne-Arapahoe agency, began his service in November 1888. He was a graduate of the College of Medicine and Surgery of Columbia University and had served an internship and a residency at New York City Hospital. The doctor, who previously practiced at Arkansas City and served as physician for the Chilocco Indian School, began his eighteen-year service at the age of thirty-seven. Westfall, a victim of the Kansas real estate collapse, undoubtedly was attracted by a guaranteed government income.

Doctor Westfall, a Democrat, was appointed near the end of the Cleveland administration. Since he resided in a Republican state, he sought aid from Democratic friends in Arkansas to secure the appointment. Agency employees were reappointed each year; after a new Republican administration took over, the reappointment of a Democratic agency physician was challenged. As election time neared, Republican leaders in Oklahoma Territory became more concerned over Westfall's presence. Numerous letters to the Secretary of the Interior protested the reappointment of Doctor Westfall. With the help of Republican friends, he retained his position until it was placed under Civil Service. Shifts in political power later prompted other requests for his replacement, but the worst charge ever made against him was that he was a Democrat in office during a Republican administration.

Westfall, with ten years experience, was a conscientious, well-trained physician, who was genuinely concerned with all aspects of Indian health. He was the first agency physician to diagnose trachoma, a major eye disease among Indians. In one of his sanitary reports, Doctor Westfall explained that the statistics on the monthly reports were not accurate indicators of the amount of work done by the agency physician. He did not enumerate the many times he gave medication for such minor ills as slight headaches, colds, nervous irritability, etc.[30] Often he spent time with patients who merely wanted someone to listen and be interested in their needs and problems. The doctor also supervised health at three reservation schools, taught hygiene and physiology, and examined the children leaving for other boarding schools. As the agency's only health official, he was responsible for inspecting the agency water supply and sewage disposal system. He protested the dumping of Fort Reno's sewage in the river upstream from the agency. The multiplicity of duties undermined Westfall's health, and illness was the reason for his resignation in 1906.

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[29] Special Agent Eugene White to Commissioner of Indian Affairs, Oct 19, 1887, Kiowa Letterbook, vol. 26, p. 7, Indian Archives, Okla. City

[30] Sanitary Report, March 1890, National Archives, Office of Indian Affairs, Letters Recived 1890, no. 11788.

Westfall summarized some of the problems which hampered his giving optimum medical care to the Indians:

> The greatest drawback to the practice of medicine among the Indians, is the lack of skilled nursing, proper food, and hospital accommodations. Teepees are woefully deficient in everything that is essential to the proper caring of the sick. . . .[31]

The prejudices and superstitions of the tribesmen further impeded his efforts. He reported that many times they concealed their sick out of ignorance and fear. Often, by the time the doctor discovered the patient he was either dead or so near death that it was impossible to save him. When medication was accepted, if immediate results were not obvious, the medicine frequently was discontinued. Sometimes, the native doctor interdicted the physician's instructions.

Like all his predecessors, Doctor Westfall sent many requests for a hospital to the Indian Bureau. He advised that "if hospitals and nurses are needed anywhere in the treatment of the sick, they are among the Indians."[32] In one report, he commented sarcastically that the case of gangrene reported could not be called "hospital gangrene" since there was no hospital.[33] Whatever the potential benefits of a hospital, the traditional Indian beliefs and superstitions would have influenced them against remaining there for treatment. A death in the hospital would have made it a house of departed spirits—a place to be feared by the tribesmen.

Another Kansas physician, Charles R. Hume, of Caldwell, was the last Kiowa-Comanche physician appointed before the reservation was opened for white settlement. He applied first for an appointment at the Cheyenne-Arapahoe aency on the grounds that a "staunch Republican" could fill the position much better than the Democratic incumbent.[34] The forty-one year old graduate of the University of Michigan had practiced eight years in Kansas. He began service in 1890 at a time of tribal unrest and insecurity fostered by encroaching whites and government determination to induce the Indians to accept individual land allotments. Extremely wet weather in 1891 resulted in a severe outbreak of malaria. The following year there were epidemics of whooping cough and measles in the schools, with 55 deaths.[35] Hume was accused by a special investigator of gross neglect of his duties during the measles epidemic; however, agency employees testified that the opposite was true—that Hume gave the kindest care, often visiting the school children's wards three times a day. The charges were not made until months later, after a new administration had been elected. Like Westfall, he was protected by Civil Service from the changing political tides.

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[31] *Ibid.*

[32] Sanitary Report, Dec. 1888, C-A Doctors, Indian Archives, Okla. City.

[33] *Ibid*, May 1889

[34] June 4, 1890, National Archives, Office of Indian Affairs, Letters Received 1890, no 17107.

As more whites came into the area, Hume, the only physician available, was called increasingly to treat white residents. He became superintendent of health, surgeon for the Rock Island Railroad, and examining surgeon for the board of pensions. Although earlier he had filled his position conscientiously, Hume's growing involvement in white affairs led to an inquiry by the Indian Bureau. The doctor was asked to either relinquish his outside practice and activities or resign as agency physician. Hume chose to resign. The special agent conducting the investigation concluded:

> While I am convinced that he has been reckless in his expenditures, that he has not devoted such time to his duties as agency physician as he should and his practice of dispensing government medicines to white people whom he has charged for his professional services is reprehensible, I will say that he is considered a respectable gentleman in this community, has an interesting family, expects to continue his practice in this town and as I see nothing to be gained by resorting to drastic measures I recommend the acceptance of his resignation at once.[36]

Doctor Hume and his family became leaders in the new state of Oklahoma. He was the first county health officer of Caddo County, the first president of the Caddo County Medical Society, and later, president of the Oklahoma State Medical Association. When the doctor died at the age of ninety-two, his life and service to the Anadarko area spanned almost fifty years.

The physicians appointed to serve the Southern Plains Indians during the reservation years, with a few exceptions, were equal to the better qualified practitioners of their time. Among them were graduates of such schools as the Miami Medical College of Cincinnati, Jefferson Medical College of Philadelphia, the University of Michigan, and Columbia. One physician was a Fellow of the American Academy of Medicine. Seven of the doctors served at other reservations, including two at the Carlisle Indian School.[37] Histories of thoracic surgery include an account of the lung surgery performed by Doctor Grinnell at the reservation.[38] Although doctors sought the position of agency physician for a variety of reasons, most who served developed a genuine interest in the Indians and exerted their best efforts to help them. In spite of the many problems, the quality of care given to these Indians was equal to or superior to that of most rural and lower class whites of the same period.

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[35] *Annual Report of the Commissioner of Indian Affairs*, 1891, p. 351.

[36] Frank Conser to Commissioner of Indian Affairs, Feb 11, 1902. National Archives, Office of Indian Affairs, Letters Received 1902, no. 10325.

[37] Doctor Obadiah G. Given was a Fellow of the American Academy of Medicine and school physician for the Carlisle Indian School. Doctor Fordyce Grinnell also served at Carlisle Indian School.

One hundred years later in the 1970s, Indian Service physicians continue to cope with too many patients, inadequate facilities, and professional isolation. The Service still attracts young men just beginning practice, but the demands of white society for their services make Indian service less appealing than a century ago.

For many Indians, the cultural gap remains almost as wide in the 1970s as it was in 1870. The government doctor represented to the Indian the white man's way; the medicine man symbolized the "buffalo road" and the traditional life of the Plains Indians. In matters of hygiene and treatment of illness, the struggle between the two cultures remains complex. The agency physician beckoned urgently toward the white man's road, while the medicine man called softly to continue down the old familiar way of life. The choices made or avoided by the Indian people then still influence the lives of their children's children today.

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[38] Richard H. Meade, *A History of Thoracic Surgery* (Springfield, Ill.· Charles C Thomas Publisher, 1961), p. 30 Lew A. Hochberg, *Thoracic Surgery Before the 20th Century* (New York: Vantage Press, 1960), p. 369.

WILLIAM WESTMACOTT'S *MEMORABILIA:* THE EDUCATION OF A PURITAN COUNTRY PHYSICIAN

PETER KRIVATSY*

In 1701, when his beloved wife died, William Westmacott, physician at Newcastle under Lyme, put into writing the highlights of his life which had begun fifty-one years earlier.

Westmacott entitled his writing *Memorabilia: or Private Things Fit to be Remembered Concerning my Life*. It is apparently based on his diary which has not yet come to light. The manuscript is written in a 50-page copybook which Westmacott received from his father in 1666. Originally, Westmacott started to write on page 50, near the end of the booklet, turning the booklet upside down. He changed his mind, however, and finally began to write on page 11, following his father's will and a list of his ten brothers and sisters. The *Memorabilia* itself consists of seven and a half pages. The end runs into notes written twenty-seven years later, presumably by one of his brothers. These notes were started at the end of the booklet but turned upside down, just as Westmacott had originally planned to write. The notes contain lists of books loaned by an unnamed meeting house, and money paid for services and food.

Besides the *Memorabilia*, William Westmacott, whose name is missing from all biographical dictionaries, city, church and university records consulted, is the author of two rare printed works: *Historia Vegetabilium Sacra*,[1] published in London in 1694 and again in the following year, and *A Short Account of Blurton-Spaw Water*,[2] also published in London in 1694.

Now that Westmacott's *Memorabilia* has emerged from the Phillips collection (and is now in the Folger Library),[3] we find that this manuscript portrays the life of a rural county physician learning the trade at the end of the seventeenth century in the West Midlands of England.

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* The author would like to express his gratitude to Mrs Laetitia Yeandle, Curator of Manuscripts at the Folger Library for her assistance in deciphering Westmacott's longhand.

This is an expanded version of a paper presented at the 47th annual meeting of the American Association for the History of Medicine, Charleston, South Carolina, May 2, 1974.

[1] W. Westmacott, *Θεολοβοτανολογια, sive, Historia Vegetabilium Sacra: or, A scripture herbal* (London, Printed for T. Salusbury, 1694), [24], 232, [8] p.

[2] W. Westmacott, *A Short Account of Blurton-Spaw-Water; with some plain Directions, and necessary Rules for the more efficacious Drinking of it* (London, Printed for William Bateman [1694?]), 4 p.

[3] Phillipps MS. 2691; Folger MS. V a. 441.

The *Memorabilia* is interesting from several points of view. It shows the early education and the apprentice years of a physician who never attended any university lectures; it also affords a glance into the medical state of the English countryside and lists several unknown doctors, physicians, and apothecaries by name. Furthermore, it provides some indications that the Westmacotts were dissenters, a fact which guided Westmacott's early years and probably his whole life, not only as a man, but also as a physician.

As Westmacott describes his life, he received his elementary education in Gloucestershire.[4] He was born in his grandfather's house and was raised by Welsh speaking relatives until the time that he was sent to his grandfather's to learn English, which he learned from his "cozen." He was then kept in Cropthorne to learn his "accidence" from his first master, Francis Brookes. Later he was enrolled in a free school to learn grammar. He studied with other masters until he was thirteen years of age. Then "I was fetch home to be taught & assist my father in his school at Pershor. The king coming in he could not conform . . . and then he was persecuted and troubled for teaching schoole." The family had to move from Pershor and they settled not far away in Defford. "There we livd," writes Westmacott, "and I read physicke at home, till I went and livd with Dr. Hargrave a practitioner in chymical phisicke, and stayed with him about a year."[5]

After Hargrave, Westmacott was bound "an apprentice to Thomas Flanill of Bromsgrove in the county of Worcester, apothecary and a chirurgeon, in order to learn how to make my own medicines, that I might make them myself, when I came to practice; and he was bound in a bond to let me goe off at 2 years end, but providence orders my going to keep the shopp of Mrs. Mary Hammond of Strattford Upon Avon . . . with the consent of Mr. Thomas Flanill, within half a year after I came to him & there [in Stratford] I lived under Dr. Waggstaff practise, & practiced myself." This is the first time that Westmacott mentions that he was practicing. He was about 17-18 years old at the time and may have been "the boy," assistant to Dr. Wagstaff. "I lived allmost 2 years [there] and then . . . I lived some time at Loughborough in Leicestershire and at Fairford, and so practiced at Faringdon in Berkshire, and in the border of Wiltshire. . . ."[6]

"In the year 1671 I selling some salt of wormwood at Bristol, providence ordered my living under Dr. Martin . . . with Phillip Read his apothecary, wher I advantaged myself in the practical part of physicke very much & stay there a year." From Bristol, Westmacott moved briefly to Bath.

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[4] Folger MS. p 13.
[5] Folger MS. p. 15.
[6] Folger MS. p 16.

"Then I fell in acquainted providentially at Salop [Shropshire] with the doctors there, & my good friend Mr. Woolrich," continues Westmacott. "I stayed there observing their practice & getting my charges about a year, & then through Mr. John Bryans meanes I removed to Stafford, ther to succeed old Dr. Fyge in practice of physicke, being solicited thereunto by Mr. Thomas Giles, the apothecary & came thither in September 1673. . . ." Westmacott practiced in Stafford for three years. He was then invited to Newcastle to replace the recently deceased Dr. Croxton. Westmacott built up a practice here, while also taking care of Dr. Croxton's former patients in Burslem. In addition, he went to Stafford every market day, presumably to take care of his patients there.[7]

Westmacott's practice in Newcastle under Lyme began in 1676, when he was twenty-six years old. From this date on, his recollections deal exclusively with his life in Newcastle. First he engaged a boy assistant. Then in 1680 he married a woman fourteen years his senior.

During the next twenty-one years he practiced in Newcastle. From our point of view, the most noteworthy occurrence during this period was the arrival of Westmacott's youngest brother, whom he took into his care in 1686. In 1691 he sent him "to Shiffnal to Mr. Wyke an apothecary and to go to Mr. Woodhouse, morning to read logick & so get skill in pharmacy and surgery." Theodor Westmacott's name does not appear again in the *Memorabilia.* Westmacott's wife, Rebecca, died on April 4, 1701 "at 6 in the evening, calmly, & preparedly, and sensibly. The Lord sanctifie this sad providence unto me, & help me to prepare for my chaing, & direct me by thy providence to what course to take in the world." That is the last sentence of the *Memorabilia.*[8]

Out of approximately thirty persons Westmacott mentions by name, about half were surely connected with the medical profession. But I was able to identify only three names out of the thirty. One was his first master in medicine mentioned as Dr. Hargrave of London. He was Abraham Hargrave philomedicus of St. Giles, who was certified in 1666.[9] He is the author of a book published in London in 1676 and entitled: *Reason in Season; or, a Word in Behalf of the Non-Collegiate Physicians, and of the Right of the People in the Choice of Their Physicians.* I could not find anything more about Hargrave, but based on the text of his book we may presume that he was not a conformist.

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[7] Folger MS. p. 17.

[8] Folger MS. p. 20

[9] J. H Bloom and R R. James, *Medical Practitioners in the Diocese of London . . An Annotated List 1529-1725* (Cambridge, University Press. 1935), p 54

Another name identified is that of Mr. Woolrich. He is the well-known Humphrey Woolrich, Quaker preacher, author of *The Unlimited God*, who was imprisoned several times between 1658 and 1682. He was carried to prison once for not removing his hat before Sir Richard Browne, lord mayor of London in 1661, and on another occasion for refusing to take the oath of allegiance.[10]

The third identifiable person is John Bryans, M.A.[11] Westmacott probably became acquainted with Bryans through Woolrich. Bryans was minister of the Presbyterian congregation meeting in Shrewsbury, just north of Salop. Westmacott mentioned that he moved to Stafford "through Mr. John Bryans meanes." It is not out of the question that Westmacott's career was helped by Puritans. Westmacott's father was a dissenter, so his Puritan relations become more and more apparent.

The *Memorabilia* informs us where, when and from whom William Westmacott learned his trade. His two printed works identify both what he learned and the persons who influenced his life philosophy.

Westmacott was born, grew up, studied, and wrote during the second part of the seventeenth century, at the beginning of the medical enlightenment. Political, economic and religious changes were also significant. The new ideas were closely interrelated and Westmacott's works reflect the effects of the changes. Reading Westmacott's *Historia* makes it clear that Galen was still an important influence on him. Westmacott still based a part of his observations of plants on Aristotelian "qualities." In his way of combining observation with reasoning Westmacott was close to Riverius, whom he also quotes. But Westmacott went further. He, too, made his observations in the old framework using the Galenic terminology, but Westmacott's curiosity or skepticism pressed him to check the views of his contemporaries, to make observations on his patients, and to analyze his own experience. Westmacott's methods of gathering and presenting information on the one hand disclose the conflict between different ideas, and on the other hand manifest his drive for new facts, an attitude which helped bring about the gradual change-over from Galenism.

The *Historia Vegetabilium Sacra: or, A Scripture Herbal* is a 232-page book, a sort of pharmacopoeia. Westmacott first gives the name of each plant in English, Latin and Greek. Then he describes it and presents its "vertues and uses." The discussion offered is very thorough, and Westmacott, besides giving his own experiences with the plant, quotes many sources.

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[10] J. Besse, *A collection of the Sufferings of the people called Quakers* (London, Luke Hinde, 1753), vol. 1, p. 332, 365, 651, 654.

[11] Folger MS. p 16.

Westmacott describes all the herbs of the Holy Scripture "from the stately cedar to the common herb hysop . . . no less than seventy and odd trees, shrubs and herbs . . . grounded upon the information of our senses, and confirmed by a chymical analysis of principles and experiment."[12] In his preface to the book Westmacott suggests that he has all the qualifications of a physician. He has the right education: "education from child, that, is working and studying under a practicer; a sensible canvasing of the elements and principles of the materia medica by pharmaco chymical inspection (before over-much phylosophical contemplation), and then a sedulous observation (at the elbow of an experienced daily practicer) of matter of fact in diseases, and of methodical application of remedies."[13] Concerning his experience, Westmacott continues: "I have inserted [in this book] my own knowledge, arising from a strict disquisition of the principles, joyn'd and confirm'd with a sedulous experience of twenty years of practice." Westmacott finally declares that "every reader may find some what herein, relating to his own calling and profit."[14] Westmacott hopes that the book will be useful and "servicable and advantageous to Christians."

Westmacott did not lack the enthusiasm, or even the fanaticism, which was so characteristic of the left wing Puritan groups. Precisely because of its fanaticism, the left wing ideology was sometimes portrayed as a useless cog in the new philosophy.

However, Westmacott was possessed not only by religion, but also with a hunger for learning, and the desire to preach the result of his new knowledge which he believed to be God's message. In the preface of the *Historia* Westmacott promised that he would not only report his own experiences and observations but also gather out the subject matter of the best books presenting "historical observations" as well.[15]

Westmacott did not have any degrees, nor did he attend any university lectures. He may never have been examined and approved as a physician by the Bishop of his Diocese. He assures us that he has nothing against academical studies, but he feels that his work will get "the sharpest detracting blasts . . . (as I guess) from the medical province." However, says Westmacott, "no letter'd hypothesis in the theory, nor a diploma of M.D. painted as a reward, can make a man the true servant of nature."[16]

Westmacott never mentioned by name any of those movements or persons which influenced his medical philosophy in general terms. However, comparing Westmacott's "Address to the Clergy" and his "Preface to the Reader" in his *Historia* with the ideas of Gerard Winstanley suggests the latter's influence.

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[12] Westmacott, *op. cit.* (n.1 above), p. [14-15]

[13] *Ibid.*, p. [7]

[14] *Ibid.*, p [16-17]

[15] *Ibid.*, p [16]

[16] *Ibid.*, p. [6-7]

It is not our aim to present here the importance of Puritanism as an ideology favorable to the new experimental science. We agree with Dorothy Stimson's view that Puritanism was an important factor in making conditions in England favorable to the new philosophy.[17] But by presenting a comparison between the teaching of Winstanley and the thinking of Westmacott, we may find a concrete case which shows clearly what George Rosen stated—that left wing puritanism, the digger movement, also produced an ideology favorable to science.[18]

Gerard Winstanley was one of the leaders of a small fanatical group called the Diggers or the True Levelers. On the first of April, 1649, Winstanley and his group appeared at St. George's Hill in the parish of Walton-on-Thames, and began to dig the wasteland and to plant some vegetables with the aim of distributing the crop among the poor. The name Diggers is derived from this effort. They were soon dispersed, but Winstanley put his ideas in writing. From 1648 on, he published several letters and pamphlets. His writings culminated in his *The Law of Freedom.*[19]

In this work describing the aims and the organization of his "Commonwealth Government," Winstanley gives directions for the "Ministry's" education and information work. The goal is to spread the true knowledge of God in many ways. For example, as Winstanley puts it, "Speeches may be made, of all arts and sciences . . . as in physick, chyrurgery, astrology . . . and such alike. And in these speeches may be unfolded the nature of all herbs and plants from the hysop to the cedar as Solomon writ of."[20] Winstanley also specifies the rules for such presentations. According to Winstanley, anyone who has experience in the subject matter may teach. "Every one who speaks of any herb, plant, art, or nature of mankind, is required to speak nothing by imagination, but what he hath found out by his own industry and observation in tryal."[21] Concerning the method and duration of the education, Winstanley supports "education . . . in schools and trades . . . till they come to fourteen years of age.'' Winstanley also stresses the importance of ''bodily imployment'' and the learning of languages and history. And why should all this be learned? ''To know the secrets of nature and creation'' and to apply knowledge to the immediate needs of society.[22] The reader of Westmacott's *Historia* might notice Winstanley's influence. What Westmacott presents in his *Historia* is the fulfillment of Winstanley's wish: go out and speak, unfold the nature of all herbs and plants for the use of society; God created all the medicines which we need and created you, the physician, to administer it to the sick.

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[17] D. Stimson, "Puritanism and the new philosophy in 17th century England." *Bull Hist Med.* 1935, *5*:321-334 (p. 321).

[18] G. Rosen, "Left-wing Puritanism and science," *Bull. Hist. Med.* 1944, *15*:375-380 (p. 375).

[19] G. Winstanley, *The law of freedom in a platform. or, True magistracy restored* (London, Printed for the Author and sold by Giles Calvert, 1652). All quotations are from the edition in the British Museum.

[20] *Ibid.*, p. 56.

[21] *Ibid.*, p. 57

It is interesting to note which authors Westmacott holds in high enough esteem to quote. In his *Historia* Westmacott quotes about seventy authors from Hippocrates and Galen through the Roman classics down to the articles of the *Journal des sçavants*.

It seems to be quite natural that Westmacott read some of the works of Samuel Hartlib, in whose *Macaria* the scholars develop medicines for the benefit of mankind. Westmacott quoted the strongly puritan Robert Boyle, one of Hartlib's correspondents, and was interested in and usually agreed with the views of other Puritans like Thomas Sydenham and Theodore Mayerne. Westmacott's only good word concerning the royalty is addressed to Mary II, but only because she erected a corporation for the manufacturing of linen, thereby providing employment opportunities for the poor. This fact was brought up by Westmacott under the sub-title: flax or linum sativum.

Westmacott, whose early years were guided by dissenters, sought and in many cases accepted the views of any scientist who, according to his belief, based his knowledge on observation. Westmacott read and used the works of John Worlidge, Robert Pitt, John Ray, as well as the royalists Robert Plot, John Evelyn and others. Nor are the names of Bauhin, the Bartholins, Thomas Brown, Jean Prevost, Lazare Rivière, Konrad Gesner and many others missing. The most quoted works are the *Pharmacopoeia Batheana* and the *London Dispensatory*.

It is unfortunate that no correspondence similar to that of John Symcots was left by Westmacott. I came across only one letter, from Sir John Floyer, answering Westmacott, concerning the chemical virtues of the Blurton water. A sample of the water was sent down to Floyer from Newcastle. Floyer's short letter was published at the end of Westmacott's pamphlet mentioned earlier: *A Short Account of Blurton-Spaw-Water*. Floyer, who published his own correspondence in several editions, never mentioned Westmacott's name in his works.

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[22] *Ibid.*, p. 56.

Sir John Floyer, an Oxford MD, royalist physician of Lichfield, is the source most frequently quoted by Westmacott. Floyer's name is known in connection with Samuel Johnson's trip to be touched by Queen Anne for the "evil." But Floyer was really an unflagging researcher for new medical methods. Westmacott probably became interested in Floyer not only because the latter was physician in the neighbouring Lichfield, but primarily because of his experience and observations. When Westmacott finished his *Historia Vegetabilium Sacra*, his further plan was to write a trilogy including the *Sacred History of Minerals* and the *Historia Animalium Sacra*,[23] neither of which was ever published. To pursue these plans, Westmacott may have needed the advice and experience of Floyer, the author of *The Touch Stones of Medicines, Discovering the Vertues of Vegetables, Minerals, & Animals*.

But Westmacott could not accept Floyer's pharmacopoeia, nor any other compilation which was not based on the Scriptures. Just as Puritans persistently argued for the absolute standard of Scripture in worship, so did Westmacott try to compile the absolute standard medical handbook of God. His aim was the reformation of the pharmacopoeias, cleansing them of the confusing, useless fancy. Because, as Westmacott wrote, we must not expect "that these plants . . . will be any blessings unto us, whether patient or physician, if we do not follow the Holy Rules, and practice according to the Word."[24]

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[23] Westmacott, *op. cit.* (n.1 above), p 19.

[24] *Ibid.*, p. 232.

THE PARIS HEALTH COUNCIL, 1802-1848*

ANN FOWLER La BERGE

In early nineteenth-century France some aspects of public health, such as epidemics and child labor, attracted the attention of the national government.[1] Essentially, however, the administration of public health was a municipal and departmental affair. Characteristic of the period was the creation of advisory bodies, called health councils *(conseils de salubrité)* at both the municipal and departmental levels to assist the prefects and mayors in the regulation of the public health. The mother council and prototype of the other French health councils was the Paris health council, founded in 1802 by the prefect of police of Paris, Dubois. By the 1830s, when the French public health movement was at the height of its activity, the health council idea had spread to other parts of France and many departments and cities—Lyon, Marseilles-Bouches-du-Rhône, Lille-Nord, Bordeaux, and Rouen, to mention a few—had their own advisory councils.[2]

The Paris health council was one of the most successful and influential institutions that grew out of the nineteenth-century French public health movement. Many of the most active participants in the movement served on the Paris health council and it was one of the focal points of their activities. The influence and success of the Paris health council were one of the tangible achievements of the French public health movement.

The purpose of this article is to discuss the Paris health council, the advisory body to the prefect of police, the model for the other French health councils, and the one institution devoted solely to the preservation of the public health in Paris.[3]

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* This is a revised version of a paper presented at the 47th meeting of the American Association for the History of Medicine, Charleston, South Carolina, May 3, 1974.

[1] Chambre des Députés, séance du 24 déc., 1821, *Moniteur universel,* 25 déc. 1821, pp. 1729-30; see the royal ordinance giving preventive measures against the importation of yellow fever from Spain, *Moniteur* 30 sept. 1821, pp. 1373-74; see also *Moniteur,* 11 août 1822, pp. 1189-91; on the child labor law see the discussion in the Chamber of Peers, *Moniteur,* janv., fév., mars, 1840, for the Chamber of Deputies, see mars, avril, déc , 1840; for the final discussion in the Peers, see janv., fév., 1841, for the final discussion in the Deputies, see mars, 1841; for the child labor law, see *Moniteur,* 24 mars 1841, p. 721.

[2] J. B. Monfalcon and A.P.I de Polinière, *Traité de la salubrité dans les grandes villes* (Paris, 1846), p. 27; Erwin Ackerknecht, "Hygiene in France, 1815-1848," *Bull Hist. Med.,* 1948, *17:* 124, 126, 128, 131.

[3] From 1802 to 1848 the members of the Paris health council prepared yearly anywhere from 150 to 600 reports dealing with various aspects of public health in the city of Paris and the department of the Seine.

When the office of prefect of police was created in 1800, that officer was charged with public health administration for the city of Paris and the department of the Seine. Count Dubois, who came to the office at the time of its creation, had been in the habit of consulting various specialists in order to get advice on public health problems. Depending on the question at hand, a doctor, a veterinarian, a chemist, or a pharmacist was consulted. From time to time, when the opinion of more than one specialist was needed, a temporary commission was set up. In 1802, one of the men who had been consulted often, Charles-Louis Cadet de Gassicourt, proposed that Prefect of Police Dubois create a permanent health council to deal with public health problems. On July 6, 1802, the Paris health council, consisting of four members, was founded.

During the first five years of its existence the council had only limited duties. These included the examination of supposedly adulterated drinks, the investigation of and reporting on epizootics, the investigation of unhealthy factories and workshops, visiting prisons and reporting on their sanitary state, and providing first-aid to the drowned and asphyxiated.

In 1807 when the health council received its definitive organization, its duties were increased and its membership enlarged to seven. The new duties of the health council expanded the scope of its activities to include most aspects of public health. The council was henceforth to report on epidemics, markets, rivers, cemeteries, slaughterhouses and slaughteryards, dumps, dissection rooms, and public baths; the council would also keep medical statistics and mortality tables, do research on the sanitary reform of public places, the perfecting of unhealthy industrial processes, and the elimination of quackery; the members were also charged with determining the best methods of heating and lighting and doing research on secret remedies.[4]

Generally, as the period progressed the activity of the health council increased. For example, during the decade 1811-1820 the health council

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Annually they prepared a report summarizing their work for the year and analyzing what they felt to be the most important topics they had dealt with. Fortunately these annual reports were all printed and published at varying intervals (the *Rapports généraux* . . . cited in the following notes) and as such provide a complete record of the activities of the Paris health council, as well as a good picture of the state of the public health in Paris in the first half of the nineteenth century. The individual reports, in manuscript form, were not available when this research was done. They can now be consulted at the Archives of the Prefecture of Police The annual reports, however, are detailed enough so as to be fully adequate for the purposes of this study.

[4] V. de Moléon, *Rapports généraux sur les travaux du Conseil de salubrité de la ville de Paris et du département de la Seine exécutés depuis l'année 1802 jusqu'à l'année 1826 inclusivement* (Paris, 1828), 1817, pp 99-103; hereafter referred to as Moléon, *R.G.*, followed by the year of the report.

prepared 2,524 reports on various aspects of public health; from 1821 to 1830 the total number of reports was 2,886; from 1831 to 1840 the number of reports increased to 4,228.[5] This increase, however, was not necessarily a sign of more widespread attention to all areas of public health.[6] Rather, it corresponded to the growing industrialization of the Parisian area after 1830, for it was primarily in this area that the health council expanded its activities.

It was specifically the investigation of requests for industrial authorization that accounted for the great expansion in health council activities after 1830. This duty dated from an imperial decree of 1810 on dangerous and unhealthy industries, which provided for the classification of industries in three areas depending on how dangerous, unhealthy or obnoxious they were. According to the decree, those persons wishing to set up a factory or workshop had to seek authorization. Before the prefect of police granted this authorization the health council would inspect and classify (in the case of a new industry) the industry and prepare a report recommending whether authorization should be given.[7] Especially after 1830 the inspection of industrial establishments became one of the most time-consuming duties of the health council.[8] By 1841 the investigation of requests for industrial authorization had become the habitual work of the health council, the council being consulted daily by the prefect of police on these requests.[9]

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[5] *Rapports généraux des travaux du Conseil de salubrité pendant les années 1840-1845 inclusivement* (Paris, 1847), 1842, p. 146, hereafter referred to as *R. G.*, followed by the year of the report.

[6] In certain areas health council duties were limited The limitations were due primarily to the emergence of other organizations whose duties included certain aspects of public health. For example, when the Royal Society for the Improvement of Prisons was founded in 1819, that body took over most of the health council's duties related to prison inspection—at least until its demise in 1829 After the founding of the Royal Academy of Medicine in 1820 that institution took over former health council duties related to epidemics, research on secret remedies, and the elimination of quackery. Moléon, *R G* , 1819, pp 154-55; 1820, p 169, 1826, p 372; *Mémoires de l'Académie Royale de Médecine*, 1828, *I*. 2; in fact the health council had been stripped of its duties with regard to epidemics as early as 1811 when the control of epidemics, which since 1800 had been one of the duties of the prefect of police, became one of the areas of responsibility of the prefect of the Seine; see Moléon, *R G.*, 1811, p. 57; 1817, pp 103-04, 111.

[7] Moléon, *R G* , 1809, p. 39; 1810, p. 40; for the 1810 decree on dangerous trades, see *Recueil des textes officiels concernant la protection de la santé publique, 1790 à 1935* (9 vols., Paris, 1957), I, pp. 165-67; for the royal ordinance of 1815 reinforcing the Napoleonic decree, see *ibid* , I, p. 209, or *Moniteur universel*, 16 fév. 1815, pp. 187-88, see also Adolphe Trébuchet, *Code administratif des établissemens dangereux, insalubres ou incommodes* (Paris, 1832). Trébuchet's book is the definitive work on this subject. See the article about it by Girard, "Rapport sur un ouvrage intitulé *Code administratif des établissemens dangereux, insalubres ou incommodes*, par M. Adolphe Trébuchet," *Annales d'hygiène publique et de médecine légale* (hereafter referred to as *Annales*), 1833, *10* 197-201

[8] For example, both the 1837 and 1838 reports emphasized the effect that increasing industrialization of the Parisian area was having on health council activities See *Rapports généraux des travaux du Conseil de salubrité pendant les années 1829 à 1839 inclusivement* (Paris, 1840), 1837, pp. 145, 158; 1838, p. 95. The reports pointed out that Paris and the department of the Seine were no longer a center of production destined only for food and for the consumption of its inhabitants, but rather that Paris had become an industrial manufacturing area whose products were sold throughout France and in most foreign countries

Membership in the health council was the responsibility of the prefect of police. When there was a vacancy the prefect chose the new member from among three candidates nominated by the health council.[10] From 1802 to 1848 the men who sat on the Paris health council were an illustrious group, well known in their particular specialties. For example, in 1807, the following men served on the Paris health council: Charles-Louis Cadet de Gassicourt, the distinguished chemist and pharmacist; Nicolas Deyeux, who held the chair of chemistry at the Paris Faculty; Guillaume Dupuytren, the second surgeon at the Hôtel-Dieu; Jean-Baptiste Huzard, inspector-general of the Veterinary School of France; Jean-Jacques Leroux, who would succeed Thouret in 1810 as dean of the Faculty of Medicine; Antoine-Auguste Parmentier, pharmacist and chemist, famous for his earlier research on the potato;[11] and Michel-Auguste Thouret, dean of the Faculty of Medicine and author of many works on hygiene.[12]

By 1828 the number of members on the health council had increased to 22. Some of the better known members who joined between 1807 and 1828 were: Etienne Pariset, doctor and writer, permanent secretary of the Royal Academy of Medicine after its founding in 1820 (1808);[13] Jean d'Arcet, a chemist well known for his research on the improvement of industrial processes (1815); C. C. H. Marc, doctor of legal medicine and personal physician of the Duc d'Orléans, later King Louis Philippe (1815); Pierre Girard, chief engineer in charge of bridges and highways for the department of the Seine (1819); Joseph Pelletier, pharmacist and chemist, winner of the Academy of Science's prize of 10,000 francs in 1827 for work in chemistry (1821); A. J. B. Parent-Duchâtelet, professor at the Faculty of Medicine, who in the late 1820s and 1830s became the most important French urban hygienist (1825);[14] Antoine-Germain Labarraque, chemist and pharmacist credited with the discovery of the disinfectant *eau de Javel* (1828). From 1831 to 1836 L. R. Villermé, who along with Parent-Duchâtelet was the leading French public hygienist of the period, was a member of the Paris health council.[15]

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[9] *R. G.*, 1841, p. 95. An example of the relative importance of inspection of requests for industrial authorization as part of the whole spectrum of health council activities is furnished by figures from the 1842 report. Out of 590 reports prepared by the health council that year, 516 dealt with industrial establishments: 54 of these were complaints and 462 were requests for authorization *R. G.*, 1842, p. 147.

[10] Moléon, *R. G.*, pp. 1-4; see also A. J. B. Parent-Duchâtelet, "Quelques considérations sur le Conseil de salubrité de Paris," *Hygiène publique* (2 vols., Paris, 1836), I, 8-10.

[11] Parmentier introduced the potato to France. His essay *Examen chimique de la pomme de terre* (Paris, 1773) won the prize offered by the Academy of Besançon for the best essay on the most appropriate vegetable to replace bread. See *La grande encyclopédie* (31 vols , Paris, 1886-1902), *25:* 1177-78. On Cadet de Gassicourt, see Alex Berman, "The Cadet circle: an era in French pharmacy," *Bull Hist. Med.*, 1966, *40* 101-111.

[12] Moléon, *R.G.*, pp. xv-xxvi

[13] Date in parentheses is date of joining the health council.

After 1828 there were twelve titular members, who were appointed for life and paid 1200 francs a year, six adjunct members, and numerous honorary members.[16] The honorary members included the Dean of the Paris Faculty of Medicine, the professors of public hygiene and legal medicine at the Paris Faculty, and persons who possessed special technical or administrative competence. This latter category included the chief mining engineer of the department of the Seine, the engineer in charge of bridges and highways for the department of the Seine, the chief engineer in charge of the Paris water supply, the architect-commissioner of small public works, the head of the 2nd division of the prefecture of police (the division in charge of public health and public works), and the head of the sanitary office at the prefecture of police.[17]

The function of the Paris health council remained essentially the same throughout the whole period under discussion. The council was to investigate various public health problems and requests for industrial authorizations, prepare reports on them, and then submit these reports to the prefect of police along with recommendations as to how the problems might be remedied. The health council prepared anywhere from 150 to 600 such reports a year. Once a report was submitted, it was then up to the prefect of police to take the recommended action, issue an ordinance regulating a certain aspect of public health or grant authorization to an industry.

Even though the health council as an advisory body possessed no legal or coercive power, its influence on public health policy was considerable. This influence was felt in three principal areas: (1) upon its recommendation police ordinances regulating the public health were issued; (2) upon its recommendation public health measures and programs were instituted; (3) upon its recommendation industries were authorized or were not granted authorization, and certain conditions were imposed upon these industries.

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[14] Parent was a member until his death in 1836. At the time of his death he was vice-president of the health council.

[15] Moléon, *R. G.*, pp xv-xl For complete list of members of the council see François and Prunet, *Le conseil*, pp. 4-80 for years 1815-1848. Villermé resigned from the health council in 1836 probably because of additional duties with the Academy of Political and Moral Sciences. For a record of Villermé's resignation, see France, Archives Nationales, F^{8}172, letter from prefect of police to Minister of Commerce, 2 April 1836, in which the resignation of Villermé and his replacement are given. Hereafter, France, Archives Nationales, will be referred to simply as AN.

[16] A titular member was a permanent, salaried member; an adjunct member was an unpaid associate member.

[17] François and Prunet, *Le conseil*, pp. 4-5; AN, F^{8}171, Note pour M. le Ministre 185-. This note contains all the decrees regulating the organization of the Paris health council. François and Prunet, *Le conseil*, p. 8, say that the salary of titular members was 1,200 francs a year dating from 1803. The note in the AN gives the date as 1832. For the new members added in 1838, see François and Prunet, *Le conseil*, p. 60.

The legal regulation of the public health in Paris was done by ordinances issued by the prefect of police and having the force of law.[18] Many of the new ordinances issued in the period under discussion were in response to health council recommendations. For example, between 1829 and 1845 some of the ordinances regulating public health dealt with toxic coloring in food, use of copper utensils, adulteration of salt, first-aid to the drowned and asphyxiated, deposits of mud and garbage in the rural communes, the cleaning of wells, the adulteration and sale of explosives, the classification of new industries, anatomy amphitheaters, butchershops, animals with contagious diseases, the transport of unhealthy materials, and the manufacture and transport of chemical matches, a new and dangerous industry.[19]

While the health council was influential in getting public health ordinances issued, it did not have the power to enforce these ordinances; and unless the ordinances were enforced, they were virtually meaningless in terms of the practical application of public health measures. From all accounts, many of the ordinances were not enforced on a regular basis.[20] This lack of law enforcement was one of the major frustrations of the Paris health council.

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[18] A Vivien, *Etudes administratives Le préfet de police* (Paris, 1842), p. 13

[19] A. Trébuchet, "Rapports généraux des travaux du Conseil de Salubrité, depuis 1829 jusqu'en 1839," *Annales*, 1841, *25:* 98-99 (this and the following article by Trébuchet are summaries of the *Rapports généraux* for the given years) An example would be the ordinance of July 1832 concerning the use of copper utensils. As a result of research done with copper and lead it was found that these were sometimes hazardous to health, so this ordinance regulated the use of copper and lead and provided for periodic visits to those public establishments that used them to be sure they were in good condition. See "Ordonnance de police concernant la salubrité," *Annales*, 1836, *16:* 463-66; A T. [A. Trébuchet], "Rapports généraux des travaux du Conseil de Salubrité depuis 1840 jusqu'à 1845 inclusivement," *Annales*, 1847, *38:* 149 See, for example, "Ordonnance concernant les liqueurs, sucreries, dragées et pastillages coloriés," *Annales*, 1843, *29:* 359-60, in which the use of mineral substances for the purpose of coloring edibles was forbidden, and annual visits to candy makers were provided for in order to enforce the law (it is interesting to note that annual visits were considered frequent enough to provide adequate enforcement).

[20] See Jean Tulard, *La préfecture de police sous la monarchie de juillet suivi d'un inventaire sommaire et d'extraits des rapports de la préfecture de police conservés aux Archives Nationales* (Paris Imprimerie municipale, 1964), p. 77. The health council reports furnish numerous examples of the lack of law enforcement. See Moléon, *R G.*, 1815, p. 86, 1818, p. 132; 1820, p 172, 1829, p. 26; 1837, p 157; 1843, p. 225; *Rapports généraux des travaux du Conseil de salubrité pendant les années* 1846, 1847 et 1848 (Paris, 1855), 1846, p. 36 See also A. Trébuchet, ed., *Bulletin administratif et judiciaire de la préfecture de police et de la ville de Paris*, No 1, janv. 1835, pp. 3-4. Apparently the bulletin ceased publication after No. 2 of February 1835.

Public health ordinances were not regularly enforced for several reasons. Throughout most of the period the Paris police was engaged more in rooting out subversives than in enforcing public health measures.[21] And when political subversion seemed under control there were always strikes, working class troubles, and crime to deal with. Except for the emergency of the cholera epidemic in 1832, there were, generally, in the 1820s and early 1830s more immediately important goals (as far as the Parisian administration was concerned) for the Paris police to pursue than the enforcement of public health ordinances.

Under the police prefecture of Gabriel Delessert (1836-48) the administrative police, that aspect of police involved with the public health, received a greater extension than it had under his predecessors. Delessert reissued many ordinances that had been ignored and forgotten, and made some attempt at enforcement of those ordinances. Nevertheless, enforcement was still not so rigorous as the health council would have liked.[22]

Public health measures and programs were also initiated upon the health council's recommendations. One good example of the influence of the health council on a major public health program involved a sewer cleaning project undertaken by the Parisian administration. By the mid-20s many of the Parisian sewers were in desperate need of a good cleaning. In 1826 when the administration decided to clean out one of the major right bank sewers the prefect of police named a commission which included members of the health council to decide on the hygienic precautions that should be taken. Traditionally one of the worst problems associated with the cleaning of sewers had been the asphyxiation of sewer workers. The recommendations of the health council which provided for adequate ventilation and disinfection with chloride of lime were adopted and the five-month project was a success. The health of the sewer workers was not affected.[23]

Further evidence of the health council's influence is offered by its handling of the problems associated with *équarrissage*, the industry of the cutting up

[21] See the inventory of the Bulletins of Paris, addressed daily from the prefect of police to the Minister of the Interior for the years 1830-1848 in Tulard, *La préfecture*, p 118 ff. These bulletins generally do not deal with public health, but rather with political activity and economic troubles. See also Tulard, *La préfecture*, pp. 77-111 See Vivien, *Etudes administratives*, pp. 14-39, John Phillip Stead, *The Police of Paris* (London. Staples Press, 1957), pp 90-109.

[22] Tulard, *La préfecture*, pp 77-78, 97-111 See also, of course, the health council reports *passim*, as all these generalizations are supported therein

[23] Moléon, *R.G.*, 1826, pp 365-71; see also the report itself: A J.B. Parent-Duchâtelet, rapporteur, "Rapport sur le curage des égouts Amelot, de la Roquette, St.-Martin et autres, ou exposé des moyens qui ont été mis en usage pour exécuter cette grande opération, sans compromettre la salubrité publique et la santé des ouvriers qui y ont été employés," *Hygiène publique*, I, pp. 308-437

and flaying of horses and other animals. The success of the municipal abattoirs which had been built under Napoleon[24] had led the city administrators to wonder if a central slaughterhouse for *équarrissage* would not be a good idea. Not only could all the small industries that used the debris be brought together, but at least a major portion of the city dump at Montfaucon could be suppressed, a plan which had been under discussion since before the revolution of 1789.

The health council was asked to consider the advantages of a central slaughterhouse and to make hygienic recommendations for its construction. The members opposed the administration's plan to build a grandiose monumental slaughterhouse, because they thought it was a waste of money and absolutely unnecessary given the improvements that had taken place in the industry by the time the administration announced its plan in the 1830s. By that time due to the application of steam power and the use of disinfectants the industrial processes of the industry had improved to such an extent that the industry was no longer offensive as it once had been. The health council suggested that the city simply purchase a tract of land and set up a central slaughteryard where individual proprietors could practice their trades.

By 1838 the administration, having become convinced of the soundness of the health council's recommendations, decided to establish a slaughteryard in Aubervilliers, outside Paris. All precautions and hygienic measures indicated by the health council such as adequate water supply and drainage, as well as the application of modern processes involving the use of steam power and disinfectants were put into effect. The health council considered the establishment of the slaughteryard a very important public health measure, especially since it made possible the final suppression of the city dump at Montfaucon in 1841, a reform which hygienists had advocated for many years.[25]

The Paris cholera epidemic of 1832 offers another example of the health council's influence. In 1831, as cholera was moving westward across Europe, administrators and hygienists in Paris began making plans to keep the disease out of the city, or if that failed, to deal with it when it arrived. The prefect of police asked the health council to prepare a report outlining preventive measures against cholera, as well as a plan of what to do should the disease invade the city in spite of preventive measures. The report done by the health council commission served as the basis of the administrative measures that were taken in Paris both in an attempt to prevent cholera and to deal with it when it arrived.[26]

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[24] The health council had not been consulted on their construction. See Moléon, *R. G.*, 1819, p. 143. The fact that the council was consulted in the 1830s is evidence of its increasing influence and authority

[25] Moléon, *R. G.*, 1824, p. 299; 1835, pp. 105-06; 1837, pp. 172-73; 1838, pp. 207-09; 1839, pp 233-35; 1840, pp. 42-45; 1841, pp. 101-02; see Parent-Duchâtelet, "Projet d'un rapport demandé par M. le préfet de la Seine sur la construction d'un clos central d'équarrissage pour la ville de Paris," *Hygiène publique*, II, pp. 309-326. For the new processes which rendered the industry practically inoffensive, see Parent-Duchâtelet, rapporteur, "Rapport sur les nouveaux procédés de MM. Salmon, Payen et Compagnie, pour la dessication des chevaux morts et la désinfection instantanée des matières fécales; précédé de quelques considérations sur les voiries de la ville de Paris," *Hygiène publique*, II, pp. 285-308; this report was done by a health council commission.

On the other hand the health council had many good plans and recommended various programs and measures that were not adopted. Usually, when the administration failed to accept the recommendations of the health council or a particular plan proposed by the council the reason given was lack of money. A good example of this involved the problems associated with garbage and mud disposal in the city of Paris. In the 1820s the health council proposed a plan which provided for a daily garbage and mud pickup and the sending of the mud and garbage out of the city on barges to be deposited away from the city, where they could ferment, eventually to be used as fertilizer. The health council's plan was never adopted, ostensibly because it was too expensive. Against the advice of the health council the administration permitted mud and garbage deposits on the land surrounding Paris, a practice which the health council deplored, but which became less offensive and less of a health hazard in the 1830s due to the application to the garbage heaps of a recently discovered disinfectant.[27]

Another example of the administration's failure to adopt a plan recommended by the health council involved water drainage in the rural communes outside Paris, where the sewer system was very primitive. Upon investigation of the situation the health council recommended the construction of a complete drainage system including the paving of streets and construction of sewers, for as the members pointed out, an unhealthy situation in the communes surrounding Paris might compromise the health of the city. By the 1840s the suggested plan had not been effected, probably because of lack of money, or rather in the opinion of the health council that the available money was being spent on monuments for the city of Paris, instead of for a sewerage system in the suburban areas. The problem of stagnant water in the rural communes went unsolved.[28]

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[26] *R. G.*, 1830-34, pp. 75-80. These five annual reports were published as one report. See also on this George Sussman, "From Yellow Fever to Cholera: A Study of French Government Policy, Medical Professionalism, and Popular Movements in the Epidemic Crises of the Restoration and the July Monarchy" (Unpublished Ph.D. thesis, Yale University, 1971), pp. 214-77.

[27] *Rapport général sur les travaux du Conseil de salubrité pendant l'année 1827* (Paris, 1828), pp. 36-38, "Rapport général des travaux du Conseil de salubrité de la ville de Paris pour l'année 1828," *Annales*, 1829, *2:* 329-30, *R.G.*, 1835, pp. 112-13; 1837, pp. 186-88; 1839, pp. 253-55 Other than financial reasons were probably involved in the administration's decision not to adopt the health council's plan. Resistance from ragpickers and garbage collectors may have accounted for the decision. See on this Edwin Chadwick, ed. M.W. Flinn, *Report on the Sanitary Condition of the Labouring Population of Great Britain. 1842* (Edinburgh· Edinburgh University Press, 1965), pp. 162-63; Sussman, "Yellow Fever to Cholera," pp. 290-303.

The third major area in which the health council exercised considerable influence was industrial authorization and classification. When the proprietor of an industrial establishment sought authorization for his industry from the prefect of police (or in the case of a first class industry from the Conseil d'Etat), the health council conducted an investigation of the proposed establishment to find out what the inconveniences to property owners in the area were, as well as what the dangers to the public health were.[29] Posters were put up in the locality of the industry and inhabitants were asked to make known their complaints or approvals.

In most cases the health council recommended authorization, but usually there were conditions imposed without which the authorization would not be given. For example, if the health hazard and the inconvenience to inhabitants was smoke, the proprietor might be required to build a high chimney or to use a smokeless fuel in order to receive authorization. In the case of a first class, or particularly obnoxious or dangerous industry, authorization could only be granted if the industry was located outside the city center away from inhabitants.[30]

Usually the prefect of police followed the recommendations of the health council with regard to industrial classification and authorization, as well as the conditions to be imposed. Enforcement of the imposed conditions often created problems, however, for the health council was powerless, being dependent upon the police to ensure that the required conditions were met. We know that in many cases enforcement was lax, for the health council often lamented the situation.[31]

The health council's influence on the Parisian public health administration varied depending on who was prefect of police and the exigencies of the moment. Generally, the influence and authority of the health council increased as the period progressed. Publicity of the health council's activities through its published reports as well as through articles in periodicals led to a growth of awareness of public health in both the Parisian and national administrations. This growing awareness highlighted the health council's role as the leading public health authority in the nation. Especially after 1835 the influence of the health council grew as Prefect of the Seine Rambuteau and Prefect of Police Delessert gave more attention to urban public health problems.[32]

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[28] *R. G.*, 1828, pp. 319-27, 1841, pp. 106-08; 1842, pp. 170-73; 1847, p. 105.

[29] In the case of a new industry the investigation would result both in a recommendation as to how the industry should be classified, as well as whether it should be authorized or not.

[30] For this reason, much of Parisian industry by the 1840s was growing up in the communes surrounding the city itself. This was beneficial to the public health of the city, but, of course, presented increasing problems for the rapidly growing suburbs

[31] See, for example, *R. G.*, 1837, pp. 157-58 In fact, complaints against industrial establishments were evidence that the imposed conditions had not been adhered to. By 1844 the situation seemed to have improved See *R. G.*, 1844, pp. 269-70.

The Paris health council considered itself to be and was considered by others to be the leading French public health authority. This was due not only to its distinguished membership and the breadth of its research, but also to the unique situation of the city of Paris and the publicity of health council activities. The fact that the seat of the council was Paris contributed to the importance of the problems it dealt with and the decisions it reached. It was in Paris that many of the scientific and technological inventions and discoveries took place; hence, many new industries got their start there. Paris was also the home of the learned academies, some of which debated on important public health topics. Finally, Paris during this period was the medical capital of the western world.

Thus the Paris health council was in a position to consider new discoveries, inventions, and industries before provincial groups, and also to be in close touch with the important medical and hygienic debates going on in the academies, the faculties, and the hospitals. For these reasons the Paris health council set the example for the rest of the nation, and its decisions were used as guidelines by other health councils and administrators.[33]

Publicity of health council activities kept French and foreign hygienists and administrators in touch with the work of the Paris health council. From 1815 the work of the Paris health council was reported on regularly in newspapers and periodicals. Especially after the founding in 1829 by a group of eminent hygienists and doctors of legal medicine of the *Annales d'hygiène publique et de médecine légale* the work of the Paris health council was carefully chronicled. Annual and individual reports appeared regularly, as well as analyses of health council research and ordinances passed as a result of the health council's recommendations.[34]

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[32] C. Rambuteau, *Mémoires du Comte de Rambuteau publiés par son petit-fils* (Paris C. Lévy, 1905), pp 267-93, 325-94; Tulard, *La préfecture,* pp. 102-11.

[33] *R. G.,* 1829, p. 35, 1837, p. 145, 1842, p 189, 1843, pp 191-92; 1844, pp 247-48; 1846, p. 1, see also Parent-Duchâtelet, "Quelques considérations sur le Conseil de salubrité," pp. 4-7.

[34] Moléon, *R. G* , pp. vii-viii; see, for example, Peuchet, "Administration. Conseil de salubrité," *Moniteur,* 13 déc. 1828, p. 1822, for a summary of work done by the health council in 1827. See the summary for 1826 by

When the annual reports of the health council were published at varying intervals, they became primarily administrative works. Copies were sent to other health councils, to prefects, and to the Minister of Commerce. There were copies in libraries and in various administrative offices which dealt with the public health.[35] Copies also found their way abroad to Britain and the United States.[36]

Given the pre-eminence of the Paris health council in public health matters by the 1830s, it is not surprising that other cities and departments used the Paris health council as a model for setting up their own health councils. By the 1830s health councils had been instituted in many of the cities and departments of France.

As early as 1815 the members of the Paris health council had suggested that the Paris council take over the role of a national coordinating body. Their proposal included making the Paris health council a central point of correspondence with the other prefectures. However, the prefect of police was not receptive to the idea and nothing came of it.[37] But by the 1830s the reputation of the Paris health council was well enough established and the activities of the health council had received enough publicity so that the idea of setting up health councils all over France based on the Paris model began to be viewed with more favor.[38] In the mid-30s T. Duchâtel, Minister of Commerce (the man in charge of public health matters at the national level after 1830),

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Peuchet in *Moniteur,* 14 déc 1827, p. 1702. See also, for example, *Archives générales de médecine,* 1823-1829, *passim* and *Annales,* 1829-1848, *passim.*

[35] AN, F⁸171, Circulaire n. 12. Ministère du Commerce. Bureau sanitaire. Salubrité. Paris, le 19 mai 1835. In this circular the minister tried to convince the prefects of the advantages to be obtained from a departmental health council; he recommended that each of the general councils would be well advised to allocate 8 francs for the purchase of the printed collection of Paris health council reports; AN, F⁸171, Circulaire du Ministre de l'Agriculture et du Commerce, le 26 oct. 1843 à M. le préfet au sujet de l'envoi du 2ème volume des actes de ce conseil. In a form letter of that same year the Minister of Agriculture and Commerce stated that the prefects should have copies of vol. 1 of the health council reports, and said he was sending a copy of vol. 2 (1827-39). Both the Paris council and its reports were most favorably spoken of by the Minister of Agriculture and Commerce in AN, F⁸171, Ministère de l'Agriculture et du Commerce. Bureau sanitaire. A M. le Préfet de ——— au sujet de salubrité, oct. 1843.

[36] See, for example, Edwin Chadwick, *Report on the Sanitary Condition,* pp. 319, 397, Lemuel Shattuck *et al., Report of the Sanitary Commission of Massachusetts. 1850.* Foreword by C.-E.A. Winslow (Cambridge, Mass.: Harvard University Press, 1948), pp. 16-24; Lemuel Shattuck, *Report on a General Plan for the Promotion of Public and Personal Health* (Boston, 1850), p. 539. The two works by Shattuck are the same; the 1850 edition, however, contains an important appendix.

[37] Moléon, *R. G*, 1815, p. 88.

[38] This was not a new idea, having been debated by the Health Committee of the National Constituent Assembly in 1790-91 On this see Henry Ingrand, *Le Comité de salubrité de l'Assemblée nationale constituante* (1790-91) (Thesis, Université de Paris, 1934), pp. 32-84; Dora B. Weiner, "Le droit de l'homme à la santé: une belle idée devant l'Assemblée constituante: 1790-91," *Clio medica,* 1970, *5*: 216-17.

considered the possibility of a nationwide program of health councils and asked the Royal Academy of Medicine to study the feasibility of the proliferation of health councils at both the departmental and *arrondissement* levels.[39]

In its report the Royal Academy of Medicine set up a proposed organization of departmental health councils to be established throughout the nation. The Academy suggested that the Paris health council serve as a model, but also advocated local variations if necessitated by differing situations. The Royal Academy of Medicine would also have been involved in the health council organization—annually it would issue a general report of the activities of the health councils based on the annual reports of all the health councils.[40]

The proposed plan did not materialize under the government of the July Monarchy. Health councils continued to be set up on local initiative, but it was not until after the revolution of 1848 that a national law instituted health councils throughout the nation at the departmental and *arrondissement* levels based on the model of the Paris health council.[41]

The Paris health council, 1802-1848, is of interest to the student of public health history for several reasons. A study of the Paris health council during these years offers an interesting insight into the public health problems faced by large cities and industrial towns in the early nineteenth century. The Paris health council is a good example of how one city attempted to solve its public health problems by instituting an advisory body to one of the chief magistrates of the city.

The Paris health council, 1802-1848, is significant because it was one of the most influential and renowned institutions that grew out of the French public health movement of the first half of the nineteenth century. Its records furnish the investigator with one of the principal sources for the study of the French public health movement and provide a good picture of the state of the public health in France in the early nineteenth century.

In addition, the Paris health council is significant because its organization and activities typify the concept of public health which prevailed in the early nineteenth century, an age when public health as a discipline was in the process of definition. Before the nineteenth century public health was synonymous with epidemic prevention; boards of health were temporarily set up to deal with such emergency situations. Once the danger was over, the restrictions and the boards of health could be and were disbanded. Public hygienists of the late eighteenth and early nineteenth centuries broadened the traditional concept of public health to include anything that was in any way related to man's health. The breadth of health council activities attests to the fact that the scope of public health as envisioned by the health council members was an all-encompassing one. Because the scope of public health was so broad in the early nineteenth century public hygienists came to consider public health as a permanent goal. For that reason the Paris health council functioned as a permanent advisory board to the prefect of police. Public health measures were no longer to be merely restrictions imposed in time of emergency, but regulations to be adhered to at all times in order to preserve the public health.

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[39] AN, F^{8}171, Circulaire n. 12. Ministère du Commerce. Bureau sanitaire. Salubrité. Paris le 19 mai 1835.

[40] C.C.H. Marc, rapporteur, "Rapport d'une commission de l'Académie royale de Médecine, à M. le Ministre du Commerce et des Travaux Publics sur l'établissement de Conseils de salubrité départementaux," *Annales*, 1837, *18:* 5-36; other members of the commission were Orfila, Pariset, Villermé, Adelon, Villeneuve, and Dupuy.

[41] AN, F^{8}171. Ministère de l'Agriculture et du Commerce. Bureau sanitaire. A M. le Préfet de———au sujet de *salubrité* Oct. 1843; AN, F^{8}171, Ministère de l'Agriculture et du Commerce Comité consultatif d'hygiène publique. République française . .; for the law see *Recueil des textes officiels*, II, p. 231-32. Even in 1848 the original plan of the Health Committee of the National Constituent Assembly was not realized, for the health councils remained strictly advisory boards, not being invested with independent power as the Health Committee had envisaged.

The reputation of the Paris health council at home and abroad was due both to its illustrious membership and the breadth of its research. Indeed the Paris health council researched and reported on most of the urban health problems of the era. Its opinions and conclusions were held in high esteem in France as well as abroad. Public health reformers such as Edwin Chadwick and Lemuel Shattuck recognized the authority of the Paris health council. The Paris health council became in the first half of the nineteenth century the pre-eminent public health authority in France and one of the leading public health institutions in the world.

THE QUEST FOR A NATIONAL HEALTH DEPARTMENT IN THE PROGRESSIVE ERA*

MANFRED WASERMAN

The development of federal health services in this country began with a Congressional act of July 16, 1798, providing for the "relief of sick and disabled seamen."[1] This marine hospital fund came under the jurisdiction of the Treasury Department, and only the importance of maritime trade to the young nation's commerce and the inability of the state governments to provide medical care for seamen prompted the states to relinquish their police power over public health in this instance to the national government.[2] In 1870 the Marine Hospital Service was organized, but the first serious attempt to unify federal public health work was a result of the 1878 yellow fever epidemic that swept up the Mississippi Valley ultimately spreading into eight states, causing great loss of life and paralyzing industry. With public sentiment strongly in favor of Congressional action, legislation was enacted in March 1879, creating a temporary National Board of Health; it was a short-lived triumph, however, for in 1883 Congress failed to pass a reenactment bill.[3] In this final quarter of the nineteenth century medical theory and practice made tremendous gains, and accompanying these changes was a proliferation of scientific and popular literature that called for public health reform. By 1894 the growing concern with public health had reached the point where President Grover Cleveland "earnestly recommend[ed] the inauguration of a national board of health or similar national instrumentality, believing the same to be a

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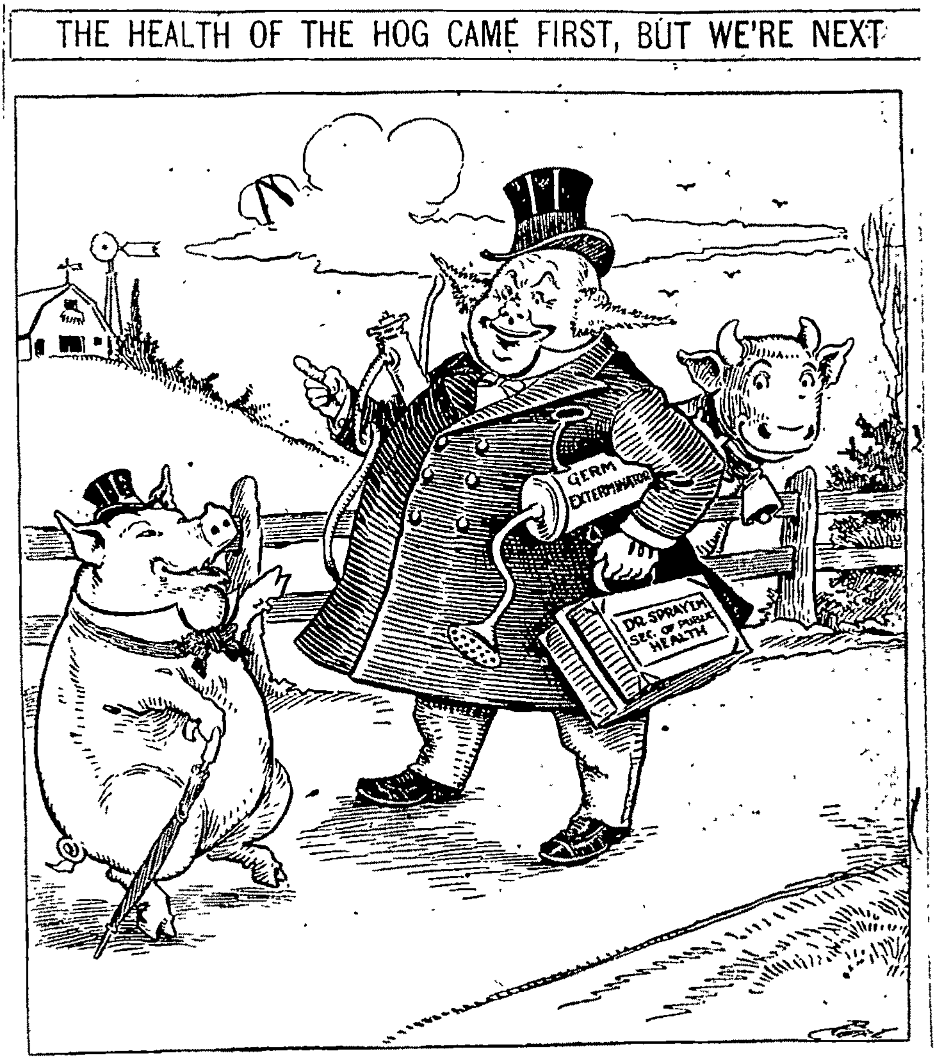
* Presented at the 47th annual meeting of the American Association for the History of Medicine, Charleston, S.C , May 4, 1974

[1] Surveys on public health work of the national government are Robert D. Leigh, *Federal Health Administration in the United States* (New York. Harper, 1927); Harry S Mustard, *Government in Public Health* (New York: Commonwealth Fund, 1945); Laurence F Schmeckebier, *The Public Health Service; Its History, Activities and Organization* (Baltimore: Johns Hopkins Press, 1923); James A. Tobey, *The National Government and Public Health* (Baltimore: Johns Hopkins Press, 1926), and Ralph C Williams, *The United States Public Health Service, 1798-1950* (Washington, D.C. Commissioned Officers Association of the United States Public Health Service, 1951)

[2] Morris Kagan, "Federal public health: a reflection of a changing constitution," *J. Hist. Med & Allied Sci.*, 1961, *16:* 276.

[3] Wilson G. Smillie, *Public Health, Its Promise for the Future* (New York: Macmillan, 1955), p. 332.


THE HEALTH OF THE HOG CAME FIRST, BUT WE'RE NEXT
GERM EXTERMINATOR
DR. SPRAYEM SEC. OF PUBLIC HEALTH

A STARTLING INNOVATION

Chester White—Hello, Doc, who are you?
Dr. Sprayem—I'm the new Secretary of Public Health
Chester White—Hog or cattle?
Dr. Sprayem—Just people!
Chester White—My, but this government is getting progressive.

(From *The Minneapolis Journal*, January 3, 1908.)

needed precaution against contagious disease and in the interest of the safety and health of our people."[4]

In 1902 the public health activities of the national government were modest and controlled by various departments. The Interior Department dealt with sanitary conditions in schools and, to a degree, school hygiene. Some of the duties of the Census Bureau, in the Department of Commerce and Labor, pertained to public health work and the Department also issued health literature relating to factories and housing. The War Department, through the Office of the Surgeon General, maintained a medical library and conducted scientific research, especially in epidemiology and sanitation. Different bureaus of the Agriculture Department carried out some public health work, particularly the Bureau of Chemistry whose food laboratory undertook investigations of foods and drugs.[5] It was the Marine Hospital Service, however, which remained the largest single federal office devoted to public health administration. Over the years the Service had acquired additional duties and in July 1902 Congress formally recognized this by passing an act that increased the efficiency of the Service and added "Public Health" to its name. Various new provisions gave the Public Health and Marine Hospital Service additional responsibilities, but the government's leading guardian of the public health remained within the Treasury Department. To unite all health related agencies of the national government in the public health field was a goal of reformers in the Progressive period.

The final years of the nineteenth century saw American medicine in a state of rapid transformation and modernization. In 1891 the American Medical Association and the National Conference of State Medical and Licensing Boards imposed some degree of uniformity regarding medical school entrance requirements, term length, and course requirements. Only with the opening of the Johns Hopkins Medical School in 1893, however, did a baccalaureate degree become a requirement for admission to medical school. By 1900 progressive members of the American Medical Association had secured reorganization of the AMA and four years later a Council on Education was established which rated the various medical schools. Among the different schools of medicine, the "regular" school was now distinctly dominant and its increasing influence and prestige aroused suspicion and antagonism from the decreasing number of homeopathists, eclectics, and other sects. At this time the muckraking campaign, led by Samuel Hopkins Adams, exposed the patent medicine industry—"the great American fraud"—and together with Upton Sinclair's *The Jungle,* helped procure the Pure Food and Drugs Act of 1906. These years of efforts by the AMA and other groups to combat quackery, to raise medical standards, and to improve medical education made the passage of any proposed national health legislation during the Progressive period a contest between two strongly opposing interests.[6]

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[4] From Tobey, *op. cit.* (n. 1 above), p. 408

[5] Walter Wyman, "The present attitude of the National government toward sanitary science," *Twenty-ninth Annual Report of the New Jersey Sanitary Association* ([Trenton, 1903]) reprint, 5 p.

"If one examines the historical course of Progressive politics," wrote Richard Hofstadter, "one finds that the Progressive movement began in the cities, spread rapidly to the states, and reached the federal level most effectively in its later phases."[7] The results of the progressives' quest for a national health department did indeed surface near the end of the period but the activism instrumental in the process was distinctly evident at an earlier time. In 1905, Congressman George Shiras, 3d, of Pennsylvania, introduced a bill asking that a commission be created to "consider and recommend legislation for the establishment of an Executive Department of the Government to be known as the Department of Sanitary Science."[8] Shiras' bill noted that although each state had the duty of conserving the public health, experience had shown that the rapid growth, concentration, and the constant intermingling of the nation's population did not allow the states acting separately to enact or enforce suitable or uniform legislation to carry through on their responsibilities. Shiras suggested that the proposed department be under the charge of a Secretary who would have a term and tenure of office similar to the heads of other Executive Departments.[9] The bill, referred to the House Committee on Interstate and Foreign Commerce, was never voted out of Committee.

Shiras' efforts proved abortive but his goal reflected a major concern of reformers. When the National Legislative Council of the American Medical Association met in Washington in January 1906, the question of a health department was an important topic of consideration. Under the leadership of Dr. Charles A. L. Reed the Council endorsed a resolution allocating funds for legal assistance on the subject and approved a plan prepared by Pennsylvania Congressman Andrew J. Barchfield, a physician, calling for the immediate establishment of a national health department. Not all elements in the Association, however, favored this direct action. The more conservative trustees, supporting an evolutionary plan, refused to authorize the proposed expenditure and thereby halted the scheme.[10]

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[6] Studies on these topics are James G. Burrow, *AMA, Voice of American Medicine* (Baltimore. Johns Hopkins Press, 1963); William G. Rothstein, *American Physicians in the Nineteenth Century, From Sects to Science* (Baltimore: Johns Hopkins Press, 1972); Richard H. Shryock, "The medical history of the American people," in his *Medicine in America, Historical Essays* (Baltimore: Johns Hopkins Press, 1966), pp. 1-45, James Harvey Young, *The Toadstool Millionaires* (Princeton, N.J.: Princeton University Press, 1961), and James H. Cassedy, "Muckraking and medicine: Samuel Hopkins Adams," *American Quarterly*, Spring 1964, *16:* 85-99.

[7] Richard Hofstadter, *The Progressive Movement, 1900-1915* (Englewood Cliffs, N J · Prentice Hall, 1963), p. 9.

[8] U.S , Congress, House, *A Bill Creating a Commission to Consider and Recommend Legislation for the Establishment of an Executive Department of the Government to be Known as the Department of Sanitary Science*, H.R. 19181, 58th Cong., 3d Sess., 1905.

[9] *Ibid.*, pp. 3-4. Shiras served in Congress, 1902-1906

Concurrent with these activities was the work of Irving Fisher and J. Pease Norton, professors of political economy at Yale. In May 1906, Fisher corresponded with President Roosevelt and proposed the creation of a national Department or Bureau of Health. This exchange was followed by a meeting between Fisher and the President in which Roosevelt indicated that before he "could take any part" in the movement, it "should first be supported by a real demand on the part of the public."[11] Several weeks later in a paper on "the economic advisability of inaugurating a national department of health," delivered before the Economic Section of the American Association for the Advancement of Science, Norton argued that a more efficient public health program would save not only lives but also millions of dollars each year. And although many steps were involved in making such a program effective, the primary one, according to Norton, was the creation of a national Department of Health achieved by consolidating the various government bureaus that dealt with health matters.[12] Norton's paper led the Association to appoint a Committee of One Hundred to study the subject, and at the Committee's meeting in April 1907 Fisher was elected President of the group.[13]

Aware of the movement, Roosevelt sent Fisher a letter congratulating the

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[10] Burrow, *op cit.* (n. 6 above), pp 94-95; letter from Irving Fisher to George Shiras, 10 January 1907, in George Shiras papers, National Library of Medicine, Bethesda, Md Manuscripts cited hereafter are from this collection unless noted otherwise

[11] Memorandum recently sent to President Roosevelt . , 21 May 1907

[12] J Pease Norton, "The economic advisability of inaugurating a National Department of Health," *J.A.M A* , Sept. 29, 1906, *47* 1003-1007

[13] Memorandum recently sent to President Roosevelt , 21 May 1907 Vice presidents were: James Adams, Felix Adler, James B. Angell, Joseph H Choate, Charles W. Eliot, G. Stanley Hall, Ben B. Lindsey, John D. Long, William H. Welch, Andrew Carnegie, and Archbishop Ireland of Minnesota The membership included John S. Billings, Luther Burbank, James McK Cattell, Thomas A. Edison, E. M. Gallaudet, Edwin O. Jordan, E. L. Trudeau, and Booker T. Washington, among others. Chances are many of the Vice Presidents and membership were enrolled as much for publicity, as for participation. The Committee of One Hundred and its work are mentioned in several surveys, the two articles on the subject are: Wm. J. Schieffelin, "Work of the Committee of One Hundred on National Health," *Annals Amer Acad Political & Social Sci.*, March 1911, *37*: 77-86; and George Rosen, "The Committee of One Hundred on National Health and the campiagn for a National Health Department, 1906-1912," *Amer. J. Publ. Health*, Feb. 1972, *62*: 261-263.

Committee on the progress made "since I talked with you a year ago," and added:

> Our national health is physically our greatest national asset. To prevent any possible deterioration of the American stock should be a national ambition. We can not too strongly insist on the necessity of proper ideals for the family, for simple living and for those habits and tastes which produce vigor and make men capable of strenuous service to their country. The preservation of national vigor should be a matter of patriotism.
>
> For this reason, and because many of the problems of public health are interstate in their character, the aid of the Federal Government is necessary to supplement the work of State and local boards of health. . . .[14]

No sooner had the President mailed his letter than he had second thoughts and again wrote to Fisher:

> I emphatically disapprove of a Cabinet Officer . . . and I would not be willing to have my [previous] letter used to create feeling for a new Cabinet officer to be at the head of a Department of Health. . . . I believe that we could with advantage have a Bureau of Health, to be put under one of the existing Departments, but we need no additional Cabinet officers. . . . While we do most urgently need a rearrangement of the bureaus and divisions of the present Cabinet . . . I am utterly against the creation of any independent bureau not under a Cabinet officer.[15]

Encouraged by Roosevelt's progressive record and wishing to "maintain and increase the interest and cooperation" of the President the Committee quickly renounced its plan for a National Department of Health.[16] In a memorandum to Committee members Fisher pleaded: "Take pains hereafter not to use the word 'Department' . . . in speaking of the goal of the movement."[17]

Although the Committee was interested in the entire problem of the national public health, its "primary and immediate purpose" was to promote the idea of the national bureau of health.[18] To prepare bills, to organize the legislative groundwork, and to help familiarize Congress with the goals and work of the Committee was the task of former Congressman Shiras. Shiras, the son of Associate Justice George Shiras of the United States Supreme

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[14] Letter from Theodore Roosevelt to Fisher, 8 May 1907, in Irving Fisher papers, Yale University Library, New Haven, Conn.; copy in Shiras papers.

[15] Letter from Roosevelt to Fisher, 8 May 1907, in Fisher papers; copy in Shiras papers; published in Elting E. Morison (ed.) *The Letters of Theodore Roosevelt* (Cambridge, Mass.: Harvard University Press, 1952), V p. 664.

[16] Letter from Fisher to Shiras, 13 May 1907.

[17] Memorandum to members of the Committee of One Hundred, [13?] May 1907.

[18] Fisher, "The Committee of One Hundred," *American Health, the Official Organ of the American Health League*, 1908, *1*.(1): 1.

Court, was a staunch advocate of health and environmental legislation and a friend of Roosevelt. To capitalize on the President's favorable feelings toward the Committee, Fisher urged Shiras to submit "something tentative" to Roosevelt as soon as possible and to get

> Mr. Roosevelt's mind working on the subject seriously, that you do not at first present to him what you consider your best plan, but rather those which you consider inferior, and to make the objections more or less apparent, so that he will feel his own mind driven logically to accept your plan as the only way out of the difficulty. Otherwise he may, in his quick way, reject the plan which you consider best, and make it difficult afterward to bring him to accept it.[19]

Fisher's enthusiasm emanating from New Haven far exceeded the pace of progress in Washington. He felt that a publicity campaign was a necessity to prepare both Congress and the public for the proposed health legislation.[20] To assist with this work, Norton became part-time executive secretary of the Committee and the American Health League was formed to promote public health education and provide financial and moral support. In November 1907, the Committee changed its name to Committee of One Hundred on National Health,[21] and in March 1908 appeared the first issue of *American Health.* William H. Welch, professor of pathology at Johns Hopkins and the retiring president of the American Association for the Advancement of Science, had recently addressed the Association on the "federal regulation of public health" and his talk helped set the tone for the Committee's crusade:

> Is it not true that the health of the people is of as much importance as the health of animals? Consider the millions of dollars the national government spends every year for the health of animals. If a tithe of what . . . is expended in efforts to control hog cholera, pleuro-pneumonia and other diseases of animals should be spent in studying and preserving the health of human beings we should not stand where we are, a by-word for the nations of the earth because of our ignorance and indifference in these vital matters. We have precedent enough, in the control already acquired over the diseases of live stock, to justify the strongest possible appeal to the government to do something toward the control of human diseases.[22]

Although very little of significance had yet been accomplished, it was already apparent there was strong opposition to the Committee's work. States' rights advocates, who had also opposed the 1906 Pure Food and Drug legislation, were against any health legislation that would increase the power of the national government. "When now the cry of states' rights is being raised,'' Fisher wrote to Roosevelt, ''no more potent argument in favor of centralization can be found than this necessity for federal regulation of public health.''[23] How strong any opposition would be Fisher could not yet know, but he felt that the Committee did not have to fear the ''fight on states rights, for it has to come sooner or later, and it is through such fights that the public is educated and interested.''[24]

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[19] Letter from Fisher to Shiras, 13 May 1907.

[20] Letter from Fisher to Shiras, 28 February 1908.

[21] Memorandum to members of the Committee of One Hundred, 20 January 1908.

[22] *American Health, op. cit.* (n. 18 above), 8.

Less predictable than the position of these antagonists were the feelings and actions of the heads of various federal offices who would be involved in any plan to reassemble health related bureaus into one agency. This was particularly true of Walter Wyman, Surgeon General of the Public Health and Marine Hospital Service. Wyman had entered the Marine Hospital Service as assistant surgeon in 1876, became surgeon general in 1891, and had held office in public health and medical societies. After thirty years in the Service Wyman's resistance to any administrative reorganization in which the Service might lose prestige or he might lose influence was understandable. Nevertheless, the transfer of the Public Health and Marine Hospital Service from the Treasury Department was basic if any benefits were to be derived from the reassembling of health-related bureaus, and opposition to this move was considered critical.

Two health bills were introduced in the Senate early in 1908, but neither mentioned any significant reorganization of federal health services. Instead, the proposed legislation—which had the strong support of Surgeon General Wyman—sought to enlarge the powers of the Public Health and Marine Hospital Service and increase the salaries of its officers.[25] Although the Committee of One Hundred did not oppose these bills in their entirety, the measures fell far short of the Committee's objectives. Moreover, the lobbying activities on behalf of the bills suggested that Wyman may have been undermining the Committee's efforts. Evidence that Wyman's philosophy differed from that of some respected public health men had been reported by Fisher to Shiras:

> At Atlantic City I had a talk with Dr. [Henry P.] Walcott, President of the Massachusetts Board of Health, and perhaps the most eminent sanitarian in this country. I found that he had the usual opinion of General Wyman, and quoted others whom I

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[23] Letter from Fisher to Roosevelt, 30 November 1907. For ''a social history of patent medicines in America before federal regulation,'' see Young, *op. cit.* (n. 6 above).

[24] Letter from Fisher to Shiras, 9 December 1907.

[25] U. S., Congress, Senate, *A Bill to Promote the Efficiency of the Public Health and Marine Hospital Service,* S. 6101, 60th Cong., 1st Sess., 1908; U. S., Congress, Senate, *A Bill to Further Protect the Public Health, and Imposing Addional Duties Upon the Public Health and Marine Hospital Service,* S. 6102, 60th Cong., 1st Sess., 1908.

> must respect. The fact that so many men in the Sub-Committee have personal grievances, and that others whom I constantly run across feel the same way, shows that there must be some things to complain of. . . .[26]

Two months later Fisher told George H. Simmons, editor of the *Journal of the American Medical Association:* "It is the transfer of Wyman's bureau which is the crucial point. Wyman opposed it and cherishes the illusion that he can be made a Department of Health in himself."[27]

Fisher feared that if any of the bills before Congress were passed the Committee's goals would be "shouldered on to the track of an enlargement of General Wyman's bureau" and efforts to create "another bureau or an independent department [would] appear absurd."[28] Charles A. L. Reed, chairman of the AMA's Legislative Committee agreed: "As it stands now the thing is worse than a farce for it will not only do absolutely nothing in the way of progress, but will, if passed, block the way to helpful legislation for years to come." If Wyman got his bill through Congress, Reed felt that the Department or bureau idea would "go glimmering for several summers."[29] William C. Woodward, health officer of the District of Columbia, also felt that the bills were primarily designed to enlarge the scope and influence of Wyman's Marine Hospital Service, and if the Committee endorsed either of them it would do so "against the best judgment of some of our best state health officers."[30]

Since Roosevelt's particular preference on the public health issue stressed what he did not want and because he would "not in advance" commit himself to the approval of any specific form of legislation, the Committee countered Wyman's bills with proposals of its own.[31] Their reorganization plan, later submitted to the president, stated

> That the Public Health and Marine Hospital Service, Treasury Department; the sanitary or public health work of the Bureau of Chemistry, Department of Agriculture; and the Division of Vital Statistics, Bureau of the Census, Department of Commerce and Labor, be placed under the same Department of the Federal Government so as better to coordinate their work, the bureaus and divisions named to be bureaus of that Department and to be under the immediate charge of one assistant secretary, who shall be a physician skilled with respect to sanitary affairs.[32]

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[26] Letter from Fisher to Shiras, 22 April 1908

[27] Letter (copy) from Fisher to George H. Simmons, 19 June 1908

[28] *Ibid*

[29] Letter from Charles A. L Reed to Fisher, 19 January 1909.

[30] Letter from William C. Woodward to Fisher, 20 March 1908.

[31] Letter from Roosevelt to Fisher, 8 May 1907, *op cit* (n. 14 above)

[32] Recommendations of the Committee of One Hundred's Subcommittee on legislation . . 21 March 1908

Fisher summarized the plan more informally to Shiras by noting that what the Committee wanted was the "transfer of Wyman, [Harvey W.] Wiley, and [Cressy L.] Wilbur to the Department of the Interior; the transfer of the Department of Health of the District of Columbia; and the creation of two new bureaus in the Department of Interior: a Children's Bureau . . . and a Bureau of Medical Investigation and Publication."[33] The Committee also felt that the Bureaus of Education, Indian Affairs, Pensions, the Government Hospital for the Insane, Freedmen's Hospital, and the Columbia Institute for the Deaf and Dumb, should be in the same Department with the above.[34]

Roosevelt, to secure a more unbiased opinion, appointed Charles D. Walcott (secretary of the Smithsonian Institution), James R. Garfield, W. L. Capps, William Crozier, and Gifford Pinchot to study the organization of the government's scientific work.[35] The Walcott Commission found that among the bureaus which were wholly or in part engaged in work pertaining to the public health there existed "a lack of coordination and effectiveness which can only be overcome by administrative supervision in one department." Reiterating its belief that the various bureaus and parts of bureaus "now scattered in the several departments should be segregated in one department" the Commission concluded that because "the welfare of such a large portion of our population" was so vitally affected it seemed "desirable that prompt action should be taken."[36]

The 1908 election campaign showed that health reform was a national problem. The progressives found the health plank of the Democratic platform very encouraging:

> We advocate the organization of all existing National public health agencies into a National bureau of public health, with such power over sanitary conditions connected with factories, mines, tenements, child labor, and other such subjects as are properly within the jurisdiction of the Federal Government and do not interfere with the power of the States controlling public health agencies.[37]

In contrast, the Republican health plank was considerably more restrained and merely declared that "we commend the efforts designed to secure greater efficiency in National public health agencies and favor such legislation as will effect this purpose."[38] Fisher, disappointed, felt that Wyman had a hand in changing the original draft which had endorsed the transfer of bureaus. "I have a hypothesis in regard to this change," wrote Fisher, and "it is that General Wyman saw the prematurely publisht platform, which was due to the journalistic enterprise of *The New York Times,* and appeared two days before the platform was adopted by the convention. In the interim . . . [Wyman] communicated with some friend in Chicago and asked him to make the modification suggested."[39] The health section of Roosevelt's last message to Congress, however, gave the reformers some cause for optimism.

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[33] Letter from Fisher to Shiras, 7 September 1908. Wiley was Chief of the Bureau of Chemistry and Wilbur was Chief Statistician for Vital Statistics, Census Bureau.

[34] Recommendations of the Committee of One Hundred's Subcommittee on legislation, *op. cit.* (n. 32 above).

[35] Schieffelin, *op. cit.* (n. 13 above), 327; Schmeckebier, *op. cit.* (n. 1 above), p. 33.

[36] U. S., Congress, House, Committee on Interstate and Foreign Commerce, *Hearings Bills Relating to Health Activities of the General Government*, 61st Cong., 2d Sess., 1910-1911, pp 22-23 There is some evidence that Pinchot and probably others from the Commission kept in close touch with Fisher on the reorganization problem.

[37] *American Health*, July, 1908, *1*(3): 1; Schmeckebier, *op. cit.* (n. 1 above), p. 33.

> There are numerous diseases, which are now known to be preventable, which are, nevertheless, not prevented. . . . This Nation can not afford to lag behind in the world-wide battle now being waged by all civilized people with the microscope foes of mankind, nor ought we longer to ignore the reproach that this government takes more pains to protect the lives of hogs and cattle than of human beings. The first legislative step to be taken is that for the concentration of the proper bureaus into one of the existing departments.[40]

Hoping to expedite the passage of reorganization legislation through compromise, advocates of health reform introduced an amendment to Wyman's bill that brought it more in line with their own objectives. Fisher even thought that it would be advisable to ask Roosevelt to specifically "decline to sign the bill unless the amendment is attached, and tell Wyman so." This, he felt, would have sufficed to have the Surgeon General get the bill with the amendment passed.[41] Elections and the mood of Congress, however, prevented any prompt action. The reorganization plan submitted to Roosevelt by the Committee was not acted on, the recommendations of the Walcott Commission had no immediate influence, and in Congress opposition had developed "in the quarter," observed Congressman Irving P. Wanger, "wherein lies very great power touching legislative procedure in the House."[42] The health bills died with the sixtieth Congress, but during the hearings on the proposed amendment Congressman Frederick C. Stevens warned the progressives of a hurdle they would have to overcome:

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[38] *Ibid.*

[39] Letter from Fisher to Simmons, 19 June 1908.

[40] U. S., *Congressional Record,* 60th Cong , 2d Sess., 1908 XLIII, part 1, 25; Schmeckebier, *op. cit.* (n. 1 above), pp. 33-34. Roosevelt was in general agreement with the Committee's reorganization plan. —See letter from Roosevelt to Charles D. Walcott, 28 September 1908, in Morison (ed.) *op. cit.* (n. 15 above), VI, pp. 1268-1269.

[41] Letter from Fisher to Shiras, 22 January 1909.

[42] Letter (copy) from Irving P. Wanger to Charles J. Faulkner, 26 February 1909. "There is very little likelihood of the passage of that measure by the House in the form in which it was reported by the Committee. . . And there is no possibility whatever of the bill being passed by the House with the amendment championed by Prof. Irving Fisher."—*Ibid.* Wyman seemed to stay active· "From what I have learned . . it seems that Wyman is not only not trying to get the amendments adopted as he promised but is actively trying to defeat them."—Letter from Reed to Fisher, 19 January 1909

> We want you gentlemen to understand the position that Congress and the States assume before you go any further. The only jurisdiction that Congress has [over health matters] is under the commerce clause of the Constitution. We have no jurisdiction at all over health as a separate and independent subject. The Constitution left that entirely within the control of the States. We can not . . . deprive the States of those police powers to control the health and welfare of their people.[43]

Within three months after becoming president Taft wrote to Fisher: "I think the first thing that ought to be done is to assemble all the bureaus relating to health matters under one head in one bureau, or to assemble them at least in one department."[44] Taft's declarations on reform were indeed reassuring. Addressing an audience at the University of Pennsylvania in February 1909, he told them that "the union of all health agencies of the National Government in one bureau or department is wise";[45] later that year in New Haven he was more emphatic.

> We cannot stop improving our government. . . . For instance, we ought to have a Bureau of Health. We ought to have that kind of a Bureau which shall render, with reference to the human being, the opportunities for research and for information that we now through the Agricultural Department offer to the farmers. . . .[46]

As to whether the new bureau of health, or the concentration of bureaus, should be in the Department of the Interior or the Department of Commerce and Labor, Taft had no particular preference.[47]

Taft felt strongly that the reassembling of bureaus under one head should precede any design for reorienting entire departments: "It is impossible for me to make appointments with reference to subsequent changes in a Department which it is doubtful Congress will approve," he wrote to Fisher. "I must deal with the situation as it is and not with what it either ought to be or is hoped to be. . . ."[48] Fisher's plan had called for the collecting of all health-related agencies into the Department of the Interior—hoping that this department would ultimately be reorganized as a Department of Health and Education.[49] In order to present the most workable plan to the president, Fisher switched to the Department of Commerce and Labor thereby placing the health agencies in the same department with the Census Bureau which had charge of vital statistics. Fisher also felt that this department had "less ancient red tape," was less "overcrowded with work on legal questions," and by its very nature was more "closely associated with matters of health." Furthermore, since "Labor" had been added to the Department's title it was now impossible, Fisher reasoned, to transfer that section out of the Department.[50]

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[43] U S., Congress, House, Committee on Interstate and Foreign Commerce, Hearings, *Hearings, On Public Health and Marine Hospital Service,* No. 2, 60th Cong , 2d Sess., 1909, pp 11-12

[44] Letter from William H. Taft to Fisher, 31 January 1909

[45] Address of William H Taft on "Present relations of the learned professions to political government," before the University of Pennsylvania, Philadelphia, February 22, 1909, in William H. Taft papers, Library of Congress, Washington, D C. (microfilm reel 566). *The New York Times* report, February 23, 1909, does not mention the health topic

[46] Address of President Taft before the Chamber of Commerce, New Haven, Conn., December 14, 1909, in Taft papers (microfilm reel 567). *The New York Times* report, December 15, 1909, does not mention the health topic.

[47] Letter from Fisher to Shiras, 12 May 1909.

As for Wyman obstructing such a move, "the main point," according to Fisher, was to get him transferred.

> After that there can be little difficulty . . . for everything we shall then want will be in line with what General Wyman wants. It is only in his imagination, if at all, that the transfer is injurious.[51]

John S. Billings had "no doubt" that the defeat of the Committee's efforts had been "mainly due to Surgeon General Wyman."[52] Whether or not the opposition to health reform could be as clearly identified as Billings and others thought remained to be learned, but in a "destroy this" note Fisher left strong evidence as to who was considered the principal adversary.

> At the request of President Taft, I secured a number of opinions in regard to Wyman and his work and the result was that most of the consultants advised President Taft to remove him as the greatest obstacle to public health in the country. The President is convinced that this will be a good thing to do, but is loath to do it until he can have something more than mere opinion. . . . He thinks that Wyman may oppose the legislation at this session of Congress and if he can be caught in so doing, there will be a chance then to remove him.[53]

For Fisher the critical time and psychological moment to strike for health reform legislation had arrived.[54] Encouraged by Taft's assertions on the subject in public, as well as his assurances in private, Fisher set out to raise $40,000 to overcome the opposition.[55] Taft had decided to accept the plan approved by the Committee and the American Medical Association and, wrote Fisher enthusiastically, "just as the Department of Agriculture has revolutionized the science of American agriculture," so a health department would "revolutionize the science of health."[56] William Welch was cautiously confident: "If success is achieved [it] will accomplish more for the country than the one million dollars which Mr. Rockefeller has just given to exterminate Hook Worm Disease."[57]

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[48] Letter from Taft to Fisher, *op cit.* (n. 44 above).

[49] "I saw the President and he is anxious to get suggestions for concentration of bureaus as soon as possible."—Fisher to Harvey W Wiley, 12 May 1909. Wiley showed reluctance to become too involved and Fisher complied by neither "mentioning or omitting mention of your name in regard to the matter."

[50] Letter from Fisher to Shiras, 12 May 1909

[51] Letter from Fisher to Shiras, 9 March 1909.

[52] Draft of letter from [John S. Billings] to Fisher [8 April 1909] in John S Billings papers, New York Public Library, N.Y.

[53] Letter from Fisher to Eliot, 6 December 1909, in Fisher papers

On February 1, 1910, there occurred an unexpected and ironic turn of events. The campaign to pass health reform legislation during the second session of the sixty-first Congress was well under way when Senator Robert L. Owen, of Oklahoma, introduced a bill establishing a Department of Public Health with a Cabinet officer at its head. Among its provisions was the specification that "all departments and bureaus, excepting the Department of War and Department of the Navy, affecting the medical, surgical, biological, or sanitary service . . . shall be combined in one department, to be known as the Department of Public Health. . . ."[58] Unaware that the president and the Committee of One Hundred had endorsed a bill for a bureau of health to be introduced in both houses of Congress, Owen was also uninformed on the history of the bureau versus department struggle.

Owen reasoned that it would be "easier to fall back from a Department to a Bureau, than it ever will be to advance a Bureau out of a Department into a Department over the natural protest of the head of that Department." While Owen was probably correct that "no Department ever willingly gives up its power," he was presumptuous to believe that President Taft did not have

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[54] Letter from Fisher to W. D [sic] Eliot, 6 December 1909, in Fisher papers; letter from Fisher to Shiras, 7 December 1909.

[55] "I saw President Taft last Monday, and he told me he intended to make reference to the public health program in his general message, and also later in a special message, and that we should not be discouraged. . . ."—Fisher to Shiras, 3 December 1909.

[56] Letter from Fisher to Shiras, 7 December 1909; letter from Fisher to Eliot, 6 December 1909, in Fisher papers. Fisher claimed that Taft's plan called for a Bureau of Health within a Department of Commerce, Labor and Health.

[57] *Ibid* The biography by Simon Flexner and James T. Flexner, *William Henry Welch and the Heroic Age of American Medicine* (New York: Viking, 1941) does not mention anything pertaining to this subject.

[58] U. S., Congress, Senate, *A Bill Establishing a Department of Public Health, and for Other Purposes*, S. 6049, 61st Cong., 2d Sess., 1910, p. 1. Section 7 stated that it would be the duty and province of this department "to supervise all matters within the control of the Federal Government relating to the public health and to diseases of animal life."

"this matter presented to him in a proper manner." Furthermore, Owen's willingness to compromise at the eleventh hour—"if upon consideration it be found impossible to obtain a Department, I shall yield . . . in the interest of the public welfare and will take a half loaf rather than no bread"—rested on the tenuous assumption that he would indeed be given the chance to take that half loaf.[59]

Convinced that Taft felt it was impossible to "take so large a step at once" and certain that there was no chance of Owen's bill being enacted, Fisher did not want to risk losing the President's support and therefore asked members of the Committee not to endorse it.[60] A joint conference of Committee members and representatives of the American Medical Association, however, decided that while it would not specifically approve the Owen bill, it would support the "principle of a Department of Health and seek hereafter to obtain a Department, although of course a Sub-Department or Bureau may have to be accepted as a compromise." Senator Owen was present at that conference and obviously had won the day.[61]

For the president the time for national health legislation was long overdue and at the Tuberculosis Congress in March 1910 he proclaimed:

> We have an Agricultural Department and we are spending $14,000,000 or $15,000,000 a year to tell the farmer . . . how they ought to treat the soil and how they ought to treat the cattle and the horses, with a veiw to having good hogs and good cattle and good horses. Now, there is nothing in the Constitution especially about hogs or cattle or horses, and if out of the Public Treasury at Washington we can establish a department for that purpose, it does not seem to be a long step or a stretch of logic to say that we have the power to tell how we can develop good men and good women.[62]

For everyone who wanted national health reform, Owen's bill and its counterpart in the House, a measure introduced by Congressman Charles E. Creager, now became the means through which to attain it.[63] Their cause was cogently stated by David Starr Jordan: "There are things that must be done, which only the nation can do."[64]

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[59] Letter from Robert L. Owen to Fisher, 2 March 1910.

[60] Letter from Fisher to Shiras, 10 February 1910; also 3 March 1910. It is worth noting that three years previously John S. Billings did "not think it possible . . . to obtain legislation to establish a Department of Health whose chief is [to] be a Cabinet Officer, and . . [he considered] efforts to obtain such legislation as being wasted."—Billings to Fisher, 12 March 1907, in Billings papers.

[61] Letter from Fisher to Shiras, 11 March 1910, letter from Fisher to William G. Eliot, Jr., 11 March 1910, in Fisher papers. Fisher's 3-page letter to Committee members gave six reasons why the "important change in policy" was made and listed four "objections to the plan asking for a Department [which] were carefully considered."

[62] Remarks of President Taft before the Tuberculosis Congress at Albany, N.Y., March 19, 1910, in Taft papers (microfilm reel 567) *The New York Times* report, March 20, 1910, does not mention the health department subject. In his address Taft remarked: "Some of our enthusiastic conservators of national resources have calculated how much the life of each man and each woman in the community is worth to that community I don't think it necessary to resort to that financial calculation in order to justify the saving of human life, such as can be accomplished by the results of research and advice that will proceed from a Bureau of Health " Norton, Fisher, and Owen had all used this sort of "calculation" at various times.

Senate hearings on the proposed Department of Public Health were held on April 29 and May 19, 1910; in the House the subject was considered in the context of the "health activities of the general government" and hearings on several bills occurred in June 1910 and January 1911. An impressive array of individuals spoke in favor of reform legislation. Among them were William Welch, president of the American Medical Association; George Miller Sternberg, former surgeon general, United States Army; Harvey W. Wiley, chief of the Agriculture Department's Bureau of Chemistry; Luther H. Gulick, of the Russell Sage Foundation and president of the American School Hygiene Association; Thomas Darlington, president of the Board of Health of New York City; Cressy L. Wilbur, chief statistician for Vital Statistics, Census Bureau; Lee K. Franklin, of the Metropolitan Life Insurance Company; Joseph Y. Porter, president of the Conference of State Boards of Health; and William C. Woodward, Health Officer of Washington, D.C., and secretary of the American Public Health Association.[65]

Since those testifying for the proposed legislation represented a number of different interests their arguments focussed on various aspects of the problem. Cressy L. Wilbur wanted the federal government to make "more active efforts . . . to extend the scope of the registration of vital statistics."[66] Representatives of life insurance companies not only agreed with him but also stressed that economic benefits could be derived from prolonging human life. Robert Lynn Cox, of the Association of Life Insurance Presidents, asked that the national government supply statistical data on human disease just as it had done with hog cholera and foot and mouth disease in cattle: "We are asking that the human kind shall be brought up to the level of the animal kind." And he reminded the senators that "the business of life insurance is more widely distributed and probably more intimately connected with the American people than any other business interest."[67] Charles F. Stokes, surgeon general, U.S. Navy, summed up the arguments of many when he stated that he was for the establishment of a health department for the reasons of "efficiency, economy, and common humanity."[68] Luther Gulick, however, was more specific:

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[63] U. S., Congress, House, *A Bill Establishing a Department of Public Health, and for Other Purposes,* H.R 24529, 61st Cong., 2d Sess., 1910. A week later Congressman James S. Simmons introduced a similar bill, H.R. 24827.

[64] Letter from David Starr Jordan to Shiras, 21 March 1910.

[65] Also speaking for health legislation were: Robert L. Cox, General Counsel of the Association of Life Insurance Presidents; Surgeon General George H. Torney, U.S. Army; Mabel Boardman, of the American National Red Cross Society; and Frank Billings and John F. Fulton. Fisher, Shiras, Charles A. L. Reed, and others, from medical, public health, and life insurance professions also testified.

[66] U. S , Congress, House, Committee on Interstate and Foreign Commerce, *Hearings* . . 1910-1911, *op. cit.* (n. 36 above), pp. 136-137.

> There are . . . each year, each summer, in the United States about 60,000 babies who die largely because they have dirty milk, but we do not know that completely and thoroughly. It is nobody's business to investigate; it is nobody's business to take notice. . . .[69]

Gulick claimed that studies by a department of health could help rectify the inadequacy of current knowledge relating to food for children. Nevertheless, Senator Reed Smoot considered Gulick's argument somewhat specious: "I do not believe [said Smoot] you will find ten physicians who will agree upon any one subject in the line of food . . . or anything else."[70]

Doctor Welch, aware that the task of maintaining the public health was still a state responsibility, made the point that through "investigation and by an accumulation . . . and presentation of the facts" a federal department of health could do more to raise the standard of public health administration throughout the country than any other agency or influence. "The most important result of a good federal department of health," said Welch, would be "that we have at once an increase in the efficiency of all our local and state boards of health."[71] George M. Kober, dean and professor of hygiene in the Medical Department at Georgetown University, told the House Committee that preventive medicine was a new science, and that Americans were still consuming about $60,000,000 worth of nostrums annually. He suggested that the national government should investigate the "cause of disease and the best methods for their prevention," and disseminate "this knowledge to state boards and the people." Congressman William C. Adamson of Georgia, however, expressed skepticism and asked Kober whether there wasn't "another disease that may become epidemic, that may be more dangerous than the thing you seek to remedy, and that is that the public will come to look to Congress to help in everything and to cure every ill that flesh is heir to?" If the national government did what Kober asked, said Adamson, it would give Americans "the opportunity to cuss the Government when a patient dies instead of cussing the doctor."[72]

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[67] U. S., Congress, Senate, Committee on Public Health and National Quarantine, *Hearings, to Establish a Department of Health and for Other Purposes*, 61st Cong., 2d Sess., 1910, pp. 15, 19. About twenty million persons held life insurance policies.

[68] U. S , Congress, House . . *Hearings* 1910-1911, *op cit*. (n. 36 above), p. 128.

[69] U S., Congress, Senate . . *Hearings* . . 1910, *op cit* (n. 67 above), p 96-97.

[70] *Ibid.*, p. 98

[71] *Ibid.*, p. 24.

Two fundamental ideas were evident throughout the testimony of those who favored the legislation: that the demand for greater conservation of the public health is both sound and desirable, and that the request for increased responsibility by the government is both logical and necessary. Harvey W. Wiley told the House Committee that the public health was "the greatest of our natural resources . . . and if the Constitution permits the conservation of forests and coal measures or natural resources, it must . . . permit the conservation of the public health."[73] George M. Sternberg, the distinguished sanitarian and retired surgeon general of the Army, was particularly explicit when testifying before the Senate:

> We do not depend upon private enterprise for the defense of our seacoast from foreign foes or for the prevention of infectious diseases among our hogs and cattle. Why should we depend upon the altruistic effects of a few citizens of the Republic and the munificence of a Henry Phipps or a John D. Rockefeller for the extinction of tuberculosis and hookworm disease? . . . Can anyone contend that the sanitary interests of the people are less important than their commercial or their educational interests? Or is there any good reason why the General Government should not recognize these interests by establishing a department of public health and placing a Cabinet officer at the head of it?[74]

Although most reformers agreed as to which bureaus should be transferred to the proposed department they had no unified plan for accomplishing such a transfer. There were also a few who wanted only certain functions of existing agencies moved to the new department and favored more cooperation among departments, rather then consolidation. Thus, for example, Wiley preferred that only the "activities intimately associated with those affecting the public health" be transferred from his Bureau of Chemistry in the Department of Agriculture.[75] On the other hand, Kober wanted even the Bureau of Mines included in the health department.[76] Significantly, several proponents of health legislation acknowledged that the bills under consideration were in some ways "defective." Dr. C. T. Sowers admitted this, but hoped that congressmen who did "know how to draw bills . . . will formulate such bills as will cover in all the points we have raised."[77] A lack of adequate planning was obvious when Senator Owen early in the hearings displayed more enthusiasm than foresight by admitting that "the only question" upon which he wanted evidence was "the desirability of a department with a seat in the cabinet. I do not care anything about the details," said Owen. "If the Committee determines on a department, then the details could be arranged. . . ."[78] The great majority of those seeking a department would have agreed with Thomas Darlington, president of the Board of Health of New York City, who endorsed the Owen measure with any modifications necessary to pass it and still retain "the spirit of the bill."[79]

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[72] U. S., Congress, House . . *Hearings* 1910-1911, *op. cit* (n. 36 above), pp. 24-27

[73] *Ibid.*, p 66.

[74] U. S., Congress, Senate . . *Hearings* . . . 1910, *op cit* (n 67 above), p 133

[75] U S., Congress, House . . . *Hearings* . . 1910-1911, *op. cit.* (n. 36 above), pp. 77, 540-541.

[76] *Ibid.*, p. 35 Congressman Charles L. Bartlett asked Kober, "Is there anything you want to leave out?" The Bureau of Mines was approved by Congress in May, 1910, "for the study and investigation of the causes of mining disasters, explosions, accidents, and their prevention. . ."

Those who spoke against establishing a health department did so principally on the grounds that it was unconstitutional, that it would increase the power of the national government, and that it would allow the American Medical Association to create a medical trust. Unlike the assemblage of well-known persons who spoke in favor of health legislation those opposing it were generally undistinguished. Only John L. Bates, who represented the National League for Medical Freedom, could be said to have achieved prominence as a former Governor of Massachusetts. Frank A. Spink, traffic manager of the Chicago and Western Indiana Railroad, opposed the legislation "primarily because it is unnecessary" and he considered the "present laws . . . ample to cope with any and all contingencies."[80] The same general argument was used by James Jay Sheridan, of the Illinois Voters and Taxpayer's Association, an organization established for the purpose of preventing the passage of "expensive and needless legislation by National, state, or municipal bodies."[81] Sheridan was one of several individuals from civic organizations and voters and taxpayers' leagues who felt that additional health legislation was either unnecessary or exclusively a function of the states.

As American medicine achieved professional maturity in the decade before 1914, the declining medical sects not only increased their mistrust of the AMA but feared that any link between organized medicine and government would lead to a medical monopoly that would effectuate their demise.[82] "It is beyond the province of government to foster or promote one class of scientific endeavor as against another," asserted Claude E. Laws, president of the Arkansas Eclectic Board of Medical Examiners. And "if the AMA is given the saddle, rein, and whip, why should it not override, overrule, and overpower all oppositions?"[83] Harry L. Child, secretary of the National Osteopathic Association, reminded the House Committee that the AMA had "continuously opposed" the Association. If any health bills are passed the federal government should make certain, Child warned, that it is "not made the unconscious agent to fetter, if not destroy, the valuable and growing branch of the healing art which we represent."[84] Much more vehement in his opposition was one Fred A. Bangs who, when testifying before the Senate Committee, spoke on behalf of the Voters and Taxpayers Association, while he claimed to represent the National League for Medical Freedom in his statements to the House Committee. Bangs accused the AMA of wanting to establish and perpetuate a medical monopoly:

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[77] *Ibid*, p. 386.

[78] U. S., Congress, Senate . *Hearings* . 1910, *op cit* (n 67 above), p 9

[79] *Ibid.*, p. 120 Endorsements supporting health legislation were submitted by the American Federation of Labor, the United Mine Workers of America and the National Grange, as well as numerous governors, medical men and lay people, and societies and associations.

[80] U. S., Congress, House . *Hearings* . . 1910-1911, *op. cit* (n 36 above), p. 375.

[81] *Ibid*, p. 353.

> What school of medicine is now in control? What school of medicine is now throughout the United States promulgating its ideas to the citizens? What school of medicine is now insisting in the various communities that vaccination be made compulsory? Is it the homeopaths? Is it the eclectics? Is it any other school than what is known as the old and regular school? . . . In nearly every state in the United States medical laws have been passed requiring licensing of doctors and establishing boards of health, permitting the establishment of municipal boards of health, and otherwise regulating and controlling the dispensing of medicine and the administering to the sick, and more or less authority has been given to each of the state and municipal boards of health according to the laws of the different States in which the same were organized, and in nearly every instance the men controlling these state and municipal boards of health are members of the allopathic section of medicine and members of the American Medical Association.[85]

Less vindictive, but surely as sincere, was Diana Belais, president of the Anti-Vaccination and Vivisection Society, who warned that if the proposed legislation became federal law it would constitute a "serious menace to the health of the nation, which would be subject . . . not only [to] compulsory vaccination against smallpox, but compulsory inoculation against diphtheria, typhoid, cancer, tuberculosis . . . if we permit these doctors to have their way with their pet theories."[86]

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[82] See Burrow, *op. cit.* (n. 6 above), Rothstein, *op. cit.* (n. 6 above); and Shryock, *op. cit.* (n. 6 above); also, Rosemary Stevens, *American Medicine and the Public Interest* (New Haven· Yale University Press, 1971), pp. 55-74; and Jonathan D. Wirtschafter, "The genesis and impact of the medical lobby: 1898-1906," *J Hist. Med. & Allied Sci*, 1958, *13:* 15-49. For "the rise and fall of a medical heresy," see Martin Kaufman, *Homeopathy in America* (Baltimore: Johns Hopkins Press, 1971).

[83] U. S., Congress, House . . . *Hearings* . . . 1910-1911, *op. cit.* (n. 36 above), pp. 238-236.

[84] *Ibid.*, p. 339.

[85] U. S., Congress, Senate . *Hearings* . . . 1910, *op. cit.* (n. 67 above), p. 209; U. S., Congress, House . . . *Hearings* . . 1910-1911, *op. cit.* (n. 36 above), p. 287.

Certainly the most capable and eloquent spokesman of the forces opposing any new legislation was John L. Bates, representing the National League for Medical Freedom, a "recently formed organization" whose president, B. O. Flower, was editor of *Arena* and *Twentieth Century Magazine*. The purpose of the League, according the Bates, was to protect the "rights of the American people against unnecessary, unjust, oppressive, fraternal, and un-American laws, ostensibly related to the subject of health." The organization opposed any legislation that tried to "put into power any one system of healing and use the government . . . to enforce its theories and opinions upon citizens. . . ."[87]

Bates presented a detailed refutation of the Owen bill. "Even though its purpose may be good," he said, "its meaning is not clear." He took issue with its vague language, its absence of details and lack of clarity regarding what duties and powers would be transferred to the new department. Bates claimed that the measure left too much room for individual interpretation, allowing those who favored the bill to use it for their own objectives at the expense of those who opposed it. Enumerating the powers of Congress, he also challenged the bill on constitutional grounds asserting that the national government had "nothing to do with regulating the internal social conditions of states" and possessed no authority to enter the states for any health purposes "excepting those which are strictly in connection with interstate commerce."

> The absence of scientific health regulations and protection in certain parts of the country furnishes no constitutional reason to justify the Federal Government in trying to supplement local action by measures of its own. . . . Why should the people of Massachusetts, Michigan, Illinois, already overburdened with taxation for their own efficient public services be taxed for the suppression of diseases in other states because the people of those other states neglect their social obligations.

The League he represented, Bates argued, was indeed interested in the public health but it did not want a department of public health whose power would allow it "to supersede Congress, to tyrannize over the individual, to coerce states, and to nullify the constitution . . . [under] the misleading plea of humanity." A competent polemicist, Bates told the Senate Committee that the government was already engaged in protecting the health of the people.

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[86] U. S., Congress, House . . *Hearings* . . 1910-1911, *op. cit.* (n 36 above), p. 316

[87] U. S., Congress, Senate . *Hearings* . 1910, *op. cit* (n 67 above), p. 176.

> It has been seriously urged that the Government spends millions for the protection of animals, and we are asked . . . why the Government should spend money to protect hogs from cholera and not spend money for the health of men. Such arguments are superficial and overlook the fact that the money that is spent to protect the hogs from cholera is not to protect the hogs, but to protect the man that eats the hog. A little thought will reveal that there is hardly a department of the National Government that is not more or less directly engaged in matters that pertain to the health of the public. . . .[88]

All arguments concerning the duties of the nation in regard to health, declared Bates, could "with equal propriety and equal force be urged in the matter of morals and of the public peace." It was essential that the freedom of the individual be not curtailed; it was as important for the individual "to have medical freedom as it is to have political and religious freedom." Lastly, he testified that a paternalistic government would keep a "nation backward" and retard individual initiative. If the American people had had a paternal government in the past, Bates proclaimed, "we would never have been the progressive people we are today."[89]

Opponents of health legislation waged a campaign that was intense and expensive. Newspapers carried large advertisements, sponsored by the National League for Medical Freedom, calling for the defeat of the Owen bill. Through a series of questions and answers entitled the "Health Bill Primer," quotations from Fisher, Norton, Reed, Welch, and others, were used in a manner that made support for health legislation seem unwise, dangerous and foolish.[90] "Somebody," said Owen in the Senate, "is spending a very large amount of money on this sudden propaganda" to influence people . . . that a Department of Health would restrict the school of medical practice that can be used.[91] Not all newspaper opposition, however, was in the form of advertising. Reasons given by the *New York Herald* for coming out against the bill were that it would create a "doctor's trust," it was promoted by the AMA, and it would give the federal government unnecessary power at a time when people were already "governed and regulated too much."[92] Although reformers retained their optimism and President Taft, in December 1910, again recommended the creation of a Bureau of Health and decried the opposition which had arisen, the campaign against health legislation had tremendous impact.[93]

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[88] U. S., Congress, House . . . *Hearings* . . . 1910-1911, *op. cit.* (n. 36 above), pp. 220, 227-228, U. S., Congress, Senate . . . *Hearings* . . . 1910, *op. cit.* (n. 67 above), pp. 178-179.

[89] U. S., Congress, Senate . . . *Hearings* . . . 1910, *op. cit.* (n. 67 above), pp. 178, 176; U. S., Congress, House . . . *Hearings* . . . 1910-1911, *op. cit.* (n. 36 above), p. 386.

[90] *The Washington Post*, June 4, 1910, p. 6.

[91] U. S., *Congressional Record*, 61st Cong., 2d Sess., 1910, CCLXV, 6847. Many reform advocates believed the opposition was receiving funds from drug and patent medicine manufacturers.

[92] *New York Herald*, May 20, 1910, p. 8.

When the House Committee on Interstate and Foreign Commerce reconvened on January 18, 1911, it had already eliminated certain health bills from further consideration. The Owen bill, and similar measures, had been tabled.[94] If some Committee members had been sympathetic towards the idea of a department, the results of a survey conducted by Chairman James R. Mann among the heads of government departments and bureaus undoubtedly added some anxiety. "I have a letter from every officer," Mann told Robert S. Woodward, representing the Committee of One Hundred,

> and the only one that did not give a reason for not being consolidated was the St. Elizabeth's Asylum for the Insane, and we were not able to determine from the report whether it was written by the superintendent or whether by the inmates.[95]

Henceforth, debate centered on bill H.R. 30292, a measure introduced by Mann, to change the name of the Public Health and Marine Hospital Service, to increase the pay of its officers, and "for other purposes."[96] To the progressives Mann's bill was similar to previous ones they had opposed and had prompted Charles A. L. Reed to comment that if accepted, "the department or bureau idea will go glimmering for several summers." A final plea by Woodward that the proposed legislation was not comprehensive enough and that "a bill somewhat like the Owen bill" was necessary had no more influence with House members than did the protestations of the League for Medical Freedom and the Anti-Vaccination League who claimed the new bill, like earlier ones, was a danger to medical freedom.[97] Prior to the vote on the House floor some Congressmen voiced skepticism about certain aspects of the measure but an able defense by Mann and an impassioned appeal by Congressman Martin D. Foster of Illinois, a physician, assured its quick passage.[98]

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[93] See Schmeckebier, *op. cit* (n. 1 above), p. 36; Tobey, *op cit* (n. 1 above), p. 378. Taft seemed to use "bureau" to mean government agency.

[94] "We have turned down the Owen bill,"—William C Adamson, U. S Congress, House . . . *Hearings* . 1910-1911, *op cit* (n. 36 above), p. 608.

[95] U S , Congress, House *Hearings* . 1910-1911, *op cit* (n 36 above), p 591 Replies to Mann from heads of departments are in this volume, pp 517-545. Surgeon General Wyman's official position on the health department issue is somewhat murky In a "personal" letter to President Taft he stated clearly that, "I do not at present see any advantages to be obtained in taking the Public Health and Marine Hospital Service out of the Treasury Department " (Letter [copy] from Walter Wyman to Taft 21 June 1909) On the other hand, in May, 1910, he told the Senate Committee that "I have always had in mind that ultimately we should have a department of public health with a Secretary in the Cabinet, and I have always had that desire in mind and I have never opposed a department of health I wish to say that I am in favor of it." (U. S., Congress, Senate . *Hearings* 1910, *op cit.* (n. 67 above), p 150) But then Wyman also considered his Public Health and Marine Hospital Service to be both "de facto and de jure a public-health service." (U. S., Congress, House *Hearings* . 1910-1911, *op cit* (n 36 above), p. 497). Wyman died in November, 1911

[96] U. S., Congress, House, *A Bill to Change the Name of the Public Health and Marine Hospital Service to the Public Health Service, to Increase the Pay of Said Officers, and for Other Purposes,* H R. 30292, 61st Cong , 3d Sess , 1911.

In the Senate Owen made a last attempt to save his bill. He hastily eliminated Section 8 and in April 1911 reintroduced the measure with the change that "nothing . . . should be construed in any manner to authorize the Department of Health to exercise any of the functions exclusively belonging to any of the several States," and that "no discrimination . . . be made against any applicant on account of any system or school of medicine."[99] The Committee of One Hundred, believing the battle could still be won, sought more funds and by the end of 1911 felt that success was "certain if the campaign is actively continued."[100] Efforts went forward into 1912, and in May Congress received the president's report on the economy and efficiency of government services recommending the creation of an independent public health service, not subject to any existing executive department but which should not have the rank of a department. The study also proposed that some existing agencies be transferred to the new office and suggested that the president be granted authority to move other relevant organizations to the new service.[101] Despite these efforts, on August 14, 1912, The Mann bill was enacted. The new law changed the name Public Health and Marine Hospital Service to Public Health Service, increased the pay of its officers, and authorized the agency to

> study and investigate the diseases of man and conditions influencing the propagation and spread thereof, including sanitation and sewage and the pollution . . . of the navigable streams and lakes of the United States, and it may from time to time issue information in the form of publications for the use of the public.[102]

Writing for the Institute for Government Research, in 1926, James Tobey felt that "this law did little else except authorize extensive investigations by the service and increase the salaries of the commissioned officers."[103] Commenting on the measure from a perspective of forty years, Wilson Smillie, of Cornell University, felt that the present United States Public Health Service was "really launched at this time because the act provided for investigation and research, improvement in methods of public administration, distribution of federal aid to state and local health departments, and interstate control of sanitation and communicable disease control."[104] Certainly the provision that empowered the government to "study and investigate the diseases of man" was responsible for many of the subsequent achievements of the United States Public Health Service. But there were also other factors that contributed to its development and expanding responsibilities, and there were: the trend toward greater involvement and control by the national government, the intangible element in the interpretation of the law, the availability of monies, the qualities of leadership and farsightedness on the part of the Surgeons General, and the increasing health consciousness of American society.

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[97] U. S., Congress, House . . . *Hearings* . . . 1910-1911, *op. cit.* (n 36 above), p. 589.

[98] U. S., *Congressional Record,* 61st Cong., 3d Sess , 1911, CCLXXI, 3620-3624. Leadership for the bill was supplied by Congressmen William Richardson and William C. Adamson, and Senator Duncan U. Fletcher.

[99] U. S., Congress. Senate, *A Bill to Establish a Department of Health, and for Other Purposes,* S.1, 62nd Cong., 1st Sess., 1911. For viewpoints of the American Medical Association, see Burrow, *op. cit.* (n. 6 above); various events in the health department campaign are discussed in issues of the *Bulletin of the Committee of One Hundred on National Health.*

[100] Letter from William J. Schieffelin to [Shiras], 9 November 1911.

[101] Schmeckebier, *op. cit.* (n. 1 above), pp. 36-37; Tobey, *op. cit.* (n. 1 above), p. 378. The Medical Department of the Army and the Bureau of Medicine and Surgery of the Navy were excluded from transfer.

[102] U S , *Statutes at Large,* XXXVII, Part 1, 309.

The reasons for the Committee's failure to achieve its goal of a national bureau or department of health were many. In a pamphlet prepared at the request of Senator Owen, Fisher noted that the opposition had misrepresented the Committee's origin by linking it to the AMA, that they "perverted" statements and "garbled" quotations from speeches and literature, that newspapers distorted facts, and that terms like "doctor's trust," "medical freedom," "medical oligarchy" and governmental "intolerance" were used to frighten people into opposing health legislation. Furthermore, Fisher stated, arguments based upon invasion of the "individual home," "states rights," "taxation," and the "decreasing [of] scientific discoveries" were all applied to obstruct the passage of the reform bills.[105] Fisher's analysis of his adversaries was accurate, but he neglected to examine the inadequacies of his own campaign.

Perhaps the most serious fault with the movement to establish a Department of Public Health was the want of a well considered, detailed plan agreed upon by those who testified before Congress. This absence of consistency and failure to be precise placed their arguments more in the realm of opinion than in the context of a well-defined, theoretically feasible, operation. The inability of the Committee of One Hundred to organize an effective publicity campaign was also a handicap; this may have been due to insufficient funds. A very important reason why the reformers failed in their objective was the divisive action that was inherent in shifting from the objective of a bureau to a department. Not only did this ostensibly divide the goals of the Committee and the president, and thereby perhaps preclude more direct support from that office, but it caused confusion, delay, and may have created an opposition of proportions that would not have existed otherwise. Whether success could have been attained if the goal throughout had been a bureau is, of course, uncertain. Even if a bill of this kind had passed the House, it might never have gotten out of the Senate—"the graveyard of reform legislation."[106]

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[103] Tobey, *op cit* (n. 1 above), p. 379

[104] Smillie, *op. cit.* (n. 3 above), p 469

[105] U. S., Congress, Senate, *Memorial Relating to the Conservation of Human Life* . prepared by Irving Fisher, 62nd Cong , 2d Sess., 1912, Doc. 493, pp. 61-77. See also S Adolphus Knopf, "The Owen bill for the establishment of a Federal Department of Health, and its opponents," *Popular Science Monthly*, Oct., 1910, *77*. 373-378.

Assuredly the basic mood of Progressiveism was intensely optimistic.[107] In 1912 health planks were secured in all three party platforms, "those in Wilson's and Roosevelt's . . . being particularly strong," wrote Fisher, and "we ought to be in a position to accomplish some of our objects at the next session of Congress."[108] Early in 1913, after a two-year delay in committee, another Owen bill finally reached the Senate floor and then failed to obtain the necessary votes for consideration by the Upper House.[109] Fisher's confidence did not wane: "The present situation in regard to public health is rather encouraging" and Wilson "seemed to be much interested," claimed Fisher as he departed for Washington in the hope of having an interview with the President.[110] In April 1913 the indefatigable Senator Owen introduced his third bill, one which the *Journal* of the American Medical Association concluded was "by far the best measure" presented on the subject.[111] Nevertheless, the Committee's campaign was coming to an end. Assuring Fisher that he had "very fully and vividly in mind" what he was told on the "important subject of [public health] legislation" Wilson informed him that the "world situation" would make it impossible "to take this great subject up until the next session of Congress."[112] Fisher continued his efforts, but finally in 1923, after work "had been suspended for some years, on account of political conditions and the World War," the Committee of One Hundred on National Health disbanded.[113]

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[106] From George E. Mowry, *The Era of Theodore Roosevelt, 1900-1912* (New York· Harper, 1958), p 207

[107] See Hofstadter, *op. cit.* (n 7 above), p 5 Other helpful works for this period are Mowry, *op. cit* , Harold U Faulkner, *The Quest for Social Justice, 1898-1914* (New York. Macmillan, 1931), Arthur S. Link, *Woodrow Wilson and the Progressive Era, 1910-1917* (New York: Harper, 1963); and Robert H. Wiebe, *The Search for Order, 1877-1920* (New York: Hill & Wang, 1967).

[108] Letter from Fisher to Shiras, 19 October 1912.

[109] Burrow, *op cit.* (n 6 above), pp. 102-103.

[110] Letter from Fisher to Eliot, 29 April 1913, in Fisher papers.

[111] U. S , Congress, *A Bill to Establish a Department of Health and for Other Purposes*, S 1, 63rd Cong , 1st Sess., 1913; from Burrow, *op. cit.* (n. 6 above), p 103 Numerous bills introduced in Congress were modeled after, or similar to, the Owen and Mann bills, these are listed in Leigh, *op cit* (n. 1 above), p. 618 (note 43). Discussions on the health department movement and related legislation appear frequently in issues of the AMA *Journal* for this period

[112] Letter (copy) from Woodrow Wilson to Fisher, 20 October 1914, in Fisher papers.

Although the quest for a national health department in the Progressive era failed, the efforts of physicians, philanthropists, social workers and writers to improve the public health succeeded, to a great degree. During this time—when communicable disease was increasingly brought under scientific control by the application of bacteriological knowledge—physicians and public health officials were no longer content with curing illness. They were also concerned with preventing it. A large number of medical men and women were involved with health reform; Fisher and Norton, however, were economists, who often stressed the economic losses that resulted from preventable illness.[114] For progressives, health was a "resource" which, through scientific research, could benefit the general welfare; it was an integral aspect of their conservation movement that was seen as a "unified scientific management of the national wealth."[115] As Fisher noted in his *Report on National Vitality:* "The problem of conserving natural resources is only one part of the larger problem of conserving national efficiency. The other part relates to the vitality of our population. The two are closely interwoven."[116] Most accomplishments relating to public health and government during this period were on the state and municipal level. Nevertheless, of utmost importance for all future health planning at every level in government, as well as out of government, was the origin of the concept of education as the dominant motive in the public health campaign.[117] The movement for a health department, through its publicity, education, and debate, focused attention on national health policy and thereby helped to create future change and development in public health administration.

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[113] Letter from Fisher to Members of the Committee of One Hundred on National Health, 29 September 1923

[114] On physicians and reform movements, see John C Burnham, "Medical specialists and movements toward social control in the Progressive era: three examples," in Jerry Israel, ed., *Building the Organizational Society; Essays on Associational Activities in Modern America* (New York: Free Press, 1972). Although economic arguments were often used to stress losses from preventable disease, the emphasis on health and human life as a financial resource may have been, in part, an attempt to capture the attention of an enterprising nation engaged in avid commercialism "But the trouble is not simply that the almighty dollar gets more attention from Congress than the life and limb of our people," wrote Fisher, "the shocking and outrageous fact is that the almighty dollar has actually opposed the protection of human health."—Fisher, "A Department of Dollars vs. a Department of Health," *McClure's Magazine,* July, 1910, *35.* 329

[115] A. Hunter Dupree, *Science in the Federal Government, A History of Policies and Activities to 1940* (Cambridge, Mass. Belknap Press, 1957), p 269.

[116] Irving Fisher, *Report on National Vitality, Its Waste and Conservation* (Washington Govt. Printing Office, 1909), p. 1 Fisher prepared the report for the National Conservation Commission, under the chairmanship of Gifford Pinchot; Roosevelt had appointed Fisher to the Commission.

[117] C -E A Winslow, *The Evolution and Significance of the Modern Public Health Campaign* (New Haven. Yale University Press, 1923), p 55

Three more decades elapsed before the national government made significant progress toward the consolidation of its health activities into one agency. Still, the government's concern with public health matters increased steadily from the time of the Progressive period. The Sheppard-Towner maternity and infancy protection act was passed in 1921, and this legislation can be traced directly to the 1909 White House Conference on child welfare standards and the work of the Children's Bureau.[118] In 1930, the Hygienic Laboratory was redesignated the National Insitute of Health and, in 1939, the Public Health Service was transferred to the Federal Security Agency which served as the single administrative head for all government health and welfare functions. Under President Eisenhower's Reorganization Plan No. 1, of 1953, all components and duties of this agency were incorporated into the new cabinet status Department of Health, Education, and Welfare. Twenty years later, on March 29, 1972, Senator Abraham Ribicoff, former Secretary of Health, Education, and Welfare, and twenty-three other senators, believing HEW to be "unwieldy, unmanageable and therefore unresponsive to both the executive and legislative branches" and "convinced that a health policy can be more rationally developed and the health programs of our Nation better handled if they are under the jurisdiction of one agency," introduced legislation to create a separate, cabinet level Department of Health.[119]

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[118] See J. Stanley Lemons, "The Sheppard-Towner Act: Progressivism in the 1920's," *J. Amer. Hist* , March, 1969, *55* 776-786.

[119] U. S., *Congressional Record*, 92nd Cong., 2d Sess., 1972, CSVIII, No. 49, S. 5050 (unbound). The bill was reintroduced on January 18, 1973, U. S., *Congressional Record*, 93rd Cong , 1st Sess , 1973, CXIX, No. 9, S. 827 (unbound).

J. E. PURKYNĚ AS A PIARIST MONK

JOHN R. BERG and JOSEF SAJNER

Jan Evangelista Purkyně (1787-1869) spent three years, 1804-1807, as a member of the Piarist Order.[1] These were years of maturation and intellectual growth. This period, a prelude to his medical training, is important for the understanding of Purkyně's ambitions and hopes for the future. At this time he first began to be interested in natural sciences, a field in which he later gained international and lasting fame.

In 1804 Purkyně finished his studies at the Piarist gymnasium in Mikulov

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[1] Although there is considerable material on Purkyně in print, there is no full-length scholarly biography in any language. In addition, almost all the material published before 1930 is out of date. Two recent books, in Western languages, are informative and reliable. Vladislav Kruta, *J. E. Purkyně (1787-1869). Physiologist: A Short Account of his Contribution to the Progress of Physiology with a Bibliography of his Works* (Prague: Academia, 1969), contains the best bibliography of Purkyně's works that is available, as well as good selected bibliography of secondary sources, but is limited in scope, as is Erna Lesky, *Purkyněs Weg: Wissenschaft, Bildung, und Nation* (Wien: Die Österreichische Akademie der Wissenschaften, 1970). *Jan Evangelista Purkyně, 1787-1869. Centenary Symposium,* edited by Vladislav Kruta (Brno: Universita Jana Evangelisty Purkyně, 1971), contains some good articles, as does *In memoriam Joh Ev. Purkyně: 1787-1869,* edited by F. Páta, J Psotniěková, and F. K Studnička (Prague Purkyňova společnost, 1937), and *Purkyně Symposion der Deutschen Akademie der Naturforscher Leopoldina in Gemeinschaft mit der Tschechoslowakischen Akademie der Wissenschaften,* edited by Rudolph Zaunick, *Nova Acta Leopoldina,* 1961; Bd. 24, Nr. 151. Now out of date, containing errors, or otherwise to be used with care are Henry J. John, *Jan Evangelista Purkyně, Czech Scientist and Patriot, 1787-1869* (Philadelphia: The American Philosophical Society, 1959); Victor Robinson, "Johannes Evangelista Purkinje (1787-1869)," *The Scientific Monthly,* 1929, *29:* 217-229; and Miroslav Křivý, "J. E. Purkyně, Czech Scientist and Patriot (1787-1869)," translated by René Welleck, *The Slavonic and East European Review,* July 1938, *17:* 186-197. Deserving special mention because it appeared in six languages, including English, is Vladislav Kruta and Mikuláš Teich, *Jan Evangelista Purkyně* (Prague· State Medical Publishing House, 1962)

In Czech there is available considerably more information, most of it in the form of articles. Among the few books are Eva Rozsívalová, *Život a dílo J. E. Purkyně* [The Life and Works of Purkyně] (Prague, Nakladatelství Československé akademie věd, 1956), more popular than scholarly; Miloslav Matoušek, *Život Jana Evangelisty Purkyně* [The Life of Purkyně] (Prague· Profily, 1946), a good brief survey, and Josef Beneš, *Purkyňův odkaz ve vědě a filosofii* [Purkyně's Legacy in Science and Philosophy] (Prague: Nakladatelství Československé akademie věd, 1957), concentrating on philosophy. Also useful are two commemorative collections of essays *Jan Ev. Purkyně, 1787-1869 Sborník statík 150. výročí narozenin českého učence* [Purkyně. Memorial Essays on the 150th Anniversary of the Birth of a Czech Scholar], edited by F. Páta, J. Psotníčková, and F. K. Studnička (Prague: Purkyňova společnost, 1937), and *Jan Evanglista Purkyně, Badatel—národní buditel. Soubor příspěvků o jeho životě a práci* [Purkyně, Researcher—National Awakener: A Collection of Contributions about his Life and Work], edited by Bohumil Němec and Otakar Matoušek (Prague, Nakladatelství Československé akademie věd, 1955) The latter contains four long articles on phases of Purkyně's life

(Nikolsburg), an old and charming town in southern Moravia, on the Austrian border.[2] He was not yet 17 years old, and although bright and educated, he saw few opportunities for the future. He had no sponsor and no money with which to continue his education. He had few marketable skills, knew no trade. Returning home to Libochovice in Bohemia to live with his mother was out of the question. Widowed for more than ten years, she was living on a small pension and the generosity of friends and had no place for her son at home. Furthermore, Purkyně understood that his mother expected him to make his own way in the world and prepare to support her in her old age.[3]

One solution was to enter the Piarist Order. The order, founded in Italy by Joseph Calasanza and recognized in 1621 as *Regulares pauperes Matris Dei scholarum piarum,* had been invited into Bohemia and Moravia during the Thirty Years' War. The Piarists had established more than a score of schools which earned a high reputation for the quality of education they offered.[4] Unlike the Jesuits, the Piarists had not been banned in the Habsburg lands in the eighteenth century, and they were able to retain their schools, albeit with some restrictions, under the reign of Maria Theresa and Joseph II. The order had maintained its primary interest in education, and had produced outstanding scholars and historians such as Gelasius Dobner and Mikuláš Adauctus Voigt.[5]

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[2] For Purkyně's stay in Mikulov, see Josef Sajner, "Jan Evangelista Purkyně a Mikulov: k 100 výročí smrti Purkyně [Purkyně and Mikulov: On the 100th Anniversary of the Death of Purkyně]," *Jižni Morava,* 1969, *5:* 45-51

[3] The standard source of information concerning Purkyně's family and early life in Libochovice are his own reminiscences, first published in *Rodinná kronika* 1864, *4:* 134-137, 151-153, 164-165, 181-184, 193-195 as "Výryvky z mého života [Excerpts from my Life]," republished several times under various titles These reminiscences appear at pages 53-81 in Karel Chodounský, *Jan Evang. Purkyně: Působeni jeho pro rozvoj české kultury* [Purkyně: His Activities on Behalf of Czech Culture] (Prague: Nákladem České akademie věd a umění, 1927), it will be cited as Purkyně, *Výryvky.* Also helpful is the section "Purkyně, Jan Evang " in *Slovnik naučný,* edited by F. L. Rieger (Prague. I. L Kober, 1867), vol VI, pp 1115-1119. This section, often erroneously labelled "autobiography," was prepared from information provided to the editor by Purkyně See also Jarmila Psotníčková, *Rodokmen J E Purkyně* [The Family Tree of Purkyně] (Prague: Nákladem Purkyňovy společnost, 1937); and Růžena Pokorná-Purkyňová, *Život tří generacì Vzponmínky na velké Purkyně* [The Life of Three Generations. Reminiscences about the Great Purkyněs] (Prague: Výtvarný odbor Umělecké besedy, 1944).

[4] On the Piarists in the Czech lands, see Augustin Alois Neumann, *Piaristé a český barok* [The Piarists and Czech Baroque] (Přerov: Knihkupectvi společenské knihtiskárny, 1933); Anton Altrichter, *Tribus saeculis peractis, 1631-1931 · Festschrift des Staatsrealgymnasiums in Nikolsburg* (Nikolsburg: Verlag des Staatsrealgymnasiums, 1931), pp. 7-10; and Josef Štěpánek, *Dějiny c k vyššího gymnasia v Litomyšli* [History of the Imperial and Royal Higher Gymnasium in Litomyšl] (Litomyšl· Nákladem města Litomyšle, 1894), *passim*

[5] Dobner and Voigt have been treated extensively The major facts on their lives and work can be gleaned from a good history of Czech literature, such as Arne Novák, *Stručné dějiny literatury české* [A Brief History of Czech Literature], adapted by Rudolf Havel and Antonin Grund (Oloumouc: R. Promberger, 1946), pp. 133-134, or Jaroslav Vlček, *Dějiny české literatury* [A History of Czech Literature] (Prague Nákladem Jednoty českých filologův, 1914), part I, vol. II, pp 147-150

Purkyně was not motivated to join the order only because he lacked other alternatives. There were positive reasons as well. He had been away from home, family, and friends for more than five years spent in a Piarist school. Fatherless, he had doubtless found father-figures among the monks who were his teachers and counselors. He could not help but view their careers with respect and admiration. As to the more distant heroes, there were the prominent Piarists of the eighteenth century, whose lives were held up as examples and whose books were in plentiful supply in the Mikulov library. There were other factors which caused Purkyně to enter the order. He commented on them in his reminiscences, written over a half-century later.

> A pure longing for a learned education impelled me to join the order. At the end of my Latin studies at the Mikulov gymnasium I did not know, nor was I able to know, higher institutions of learning beyond the Piarist Order. My inborn desire for a higher spiritual life made me look up to my teachers as to higher earthly personalities, whom it was my most fervent desire to follow.[6]

Jan Purkyně asked to be permitted to join the order in 1804, and was accepted. For his novitiate training he was sent to the Piarist monastery in the north Moravian town of Stará Voda (Altwasser). The training for teacher-priests normally required two years. Because of a severe shortage of teachers in the order, the group of 1804-05 was rushed through in one year. Purkyně did well, and was the best novice in his group of four. In the examinations taken in April and September, 1805, he received gold medals in all subjects.[7]

In the late fall of 1805, Brother Silverius—for this was the religious name Purkyně adopted—left the monastery to assume his teaching duties. New members of the order were expected to teach in Piarist schools for two years before taking final vows and being ordained. For the school year 1805-06 Purkyně was sent to Strážnice, near the Slovak border in southern Moravia, where he taught the second grammar class at the gymnasium.[8] The next school year he was assigned to Litomyšl (Leitmischl) in Bohemia, just across the Moravian border, where he taught the first class in the Piarist grammar school.[9]

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[6] Purkyně, *Výryvky*, p 53 This, and all other translations, are by the authors.

[7] Eduard Wondrák, "Piaristický novic Silverius Purkyně ve Staré Vodě u Olomouce" [Piarist Novice Silverius Purkyně in Stará Voda near Olomouc], *Časopis lékařů českých*, July 25, 1969, *108* 962-964 Dr Wondrák's article was based on Piarist records now deposited in the State Central Archives, Prague. For Stará Voda and the Piarists there, see Neumann, *op cit.* (n 4 above), pp. 122-123, and Josef Malý, "Libavský okres" [The District of Libava], *Vlastivěda moravská*, 1931, pp. 19, 196-203

[8] *Calculi quos litterarum humaniorum studiosi in C. R Stražnicensi Scholarum Piarum gymnasii utroque semestri inde ab anno 1757-1844 retulerunt*, District Archives, Hodonín: unpaginated, sections on semesters I and II, 1806. This volume contains the first known signature of Purkyně, which appears as "Silverius Purkinie." According to Dr. Henry John, Purkyně did not learn how to spell his name in Czech until he went to Prague University· John, *op cit* (n 1 above), p. viii On Strážnice, the Piarist Order there, and Purkyně's sojourn, see Neumann, *op cit* (n 4 above), pp. 37-44; František Dvorský, "Strážnický okres [The District of Strážnice], "*Vlastivěda moravská*, 1914, p. 120, F A. Slavík, *Moravské Slovensko od XVIII stoleti* [Moravian Slovakia since the 18th Century] (Hodonín Rudolf Fencl, 1909), pp. 190-204, and Josef Jebavý,

Before the 1807-08 school year was to start, Brother Silverius was scheduled to take his final vows. Instead he asked the Father Provincial, Peter Bruckner,[10] for permission to leave the order, and his request was granted. In the *Annotationes domesticae,* sandwiched between an entry that Brother Aubertus went on vacation and a notation that Brother Zephyrinus took a trip to Vienna, is the brief entry, dated September 17, 1807, that "Silverius Purkinie left our institution and went to his relatives in Libochovice."[11] Purkyně's motives for leaving the order are described in his reminiscences.

> I familiarized myself somewhat, through reading, with the state of the new literature in Germany and other lands of culture, and admired its best authors. Learning also the fates of my aging monastic colleagues, worn out early by hard school work, I dreaded a similar fate for myself. I became acquainted with Fichte's philosophy which in vivid words described the calling of a proper scholar in human society, leading the human spirit to unlimited mental freedom. I began to reflect on another, happier condition of life, and I felt sufficiently strong to obtain for myself an independent position in the world. No, even the desire to achieve greatness forced me to follow my own career. Previously having occupied myself in the cloister only with philological and historical studies, I turned my attention now to Czech poetry, being familiar with the poems of Puchmayer and Nejedlý; then turned to philosophy, by whose spirit my own was set free. Philosophy even awakened me to a profound anticipation that in natural science, of which, of course, I had only a dim idea, I would perform something notable. These were the main motives which impelled me toward a freer life. It was not the dislike of poverty to which I would be bound by the vows of *pauperum scholarum piarum;* not having known wealth, I did not recognize poverty. Nor was it celibacy, for I had not known sexual love. It was more a rebellion against continued obedience to my superiors, since their authority and dignity were not always evident to me, and since they did not represent dignity and intelligence to me. Perhaps I was also influenced by the example of two of my fellow-clerics, who left the order.[12]

"Buditelská a národní činnost J. E. Purkyně [The Awakening and National Activities of Purkyně]," *Výroční zpráva státního československého reálného gymnasia ve Strážnici* XXXIV (1937-38), 6-12

[9] *Continuatio Matriculae gymnasii Litomissliensis Scholarum Piarum ab Anno Domini 1803* [to 1838], District Archives, Litomyšl: unpaginated, section entitled "Catalogus discipulorum gymnasii Litomissliensis praefecto P. Liborio Pitsch Anno 1807." For Litomyšl and the Piarists there, see Štěpánek, *op. cit.* (n. 4 above), pp. 2-9, 63-66, and Zdeněk Nejedlý, *Litomyšl: Tisíc let života českého města* [Litomyšl. A Thousand Years of the Life of a Czech City] (Litomyšl: Výstavní výbor města Litomyšle, 1934), *passim*. The students attended the school for three years.

[10] Štěpánek, *op. cit.* (n. 4 above), p. 134.

[11] "Silverius Purkinie deserto Instituto nostro ad parentes Libochovicium migravit." *Annotationes domesticae ab anno 1786 usque ad annum 1813*, District Archives, Litomyšl, p. 388

[12] Purkyně, *Výryvky*, pp. 53-54.

These recollections, the memories of a man in his seventies about a decision he took when he was only nineteen, have been the major source of information about Purkyně's experiences in the order. Examination of Piarist records, located in the Hodonin and Litomyšl archives, allows a more detailed reconstruction of Purkyně's life as a monk, particularly during the year spent in Litomyšl, just prior to the decision to leave the order.

As a Piarist novice, Brother Silverius had duties of a religious nature, such as caring for the chapel and teaching catechism, in addition to his classroom duties.[13] He still had time, however, to pursue his private interests. In both Strážnice and Litomyšl the Piarists had fine libraries and Purkyně made good use of them. He taught himself French and Italian—part of his philological studies—to bring the number of languages at his command to six: the others were Czech, German, Latin, and Greek.[14]

The young monk also found time to do the reading mentioned in his reminiscences. Antonín Puchmayer (1769-1820), Jan Nejedlý (1776-1834), and Vojtěch Nejedlý (1772-1844)[15] are not held in high esteem by literary critics today, for their language was somewhat crude and their talent not great. They are noteworthy primarily for their early attempt during the "renaissance" of the nation to write poetry in the Czech language. By reading them, Purkyně reinforced his affection for poetry which had been nurtured during his gymnasium studies.[16] His belief in the possibilities of the Czech language was also strengthened. This belief—that for the transmission of ideas the Czech was, or could be, equal to any other language—bore fruit in Purkyně's later activities. It led him to share in the founding of the first Czech scientific journal, *Krok,* in the 1820s, to fight for the rights of the Czech language at the Medical Faculty of Prague University in the 1850s and 1860s, and to be the moving spirit behind the formation of the *Journal of Czech Physicians (Časopis lékařů českých)* and the Society of Czech Physicians (Spolek českých lékařů) in the 1860s.

The philosophy Purkyně read was primarily that of eighteenth-century

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[13] Jebavý, *op. cit.* (n. 8 above), p 7

[14] *Slovník naučný, op. cit.* (n 3 above), p. 1115. Purkyně apparently had a real talent for languages. Later he also learned Polish, English, Russian, Hungarian, and Sanskrit.

[15] It is unclear which of the Nejedlý brothers Purkyně referred to.

[16] This was largely due to the influence of Dominik František Kinský, Piarist teacher in Mikulov Kinský's special love was the poetry of Friedrich Schiller, and he passed his affection on to his students. Antonín Rybička, *Přední křistelé národa českého: Boje a usilování o právo jazyka českého začátkem přítomného století* [Prominent Resurrectors of the Czech Nation The Struggle and Efforts for the Right of the Czech Language at the Beginning of the Present Century], 2 vols., bound and paginated as one (Praha: František Šimáček, 1883-84), pp. 215-228, 396

Germany, and included such authors as Kant and Schelling.[17] He was particularly struck by Fichte's lectures *Über die Bestimmung des Gelehrten* and *Über das Wesen des Gelehrten* in which the scholar is regarded as the educator of mankind.[18] In addition to his independent reading, in Litomyšl Purkyně advanced his education in a formal way. The Piarists had a program in which students could continue beyond the gymnasium level and do part of their university work.[19] Purkyně took advantage of this opportunity and completed in Litomyšl the first year of the philosophy program.[20] This program was not restricted to members of the order. Actually Purkyně was one of the four clerics in a class of 71.[21] He had a good record despite his teaching and other duties: in all but one of the 30 categories shown in the *Liber calculorum,* he earned "eminenter," the equivalent of an A. The subjects included Religion, Philosophy, History, and Greek[22] as well as Mathematics. From his studies, both formal and informal, Purkyně absorbed ideas important both for his decision to leave the order and for his later scientific work: the notion of the free spirit of the individual, the concept that the individual has a duty to society, and the importance of natural science. His enlarged horizon and the attitudes expressed by the German philosophers were largely responsible for Purkyně's increased confidence and high hopes for the future.

When he reached Litomyšl, his doubts about life in the order were strengthened. In his reminiscences he commented on brother monks prematurely aged by overwork. The class Purkyně was teaching contained more than 140 pupils. Their ages ranged from five to fifteen years with an average of about eight and one-half years.[23] Purkyně, who had enjoyed his own early schooling,[24] probably had looked forward to interesting, stimulating experiences as a teacher. He found that pounding Latin grammar from Broeder's text[25] into the boys' heads was often dull, boring, and even frustrating. Purkyně's problems as a teacher may have been complicated by the fact that he spoke German, the language of instruction until the students mastered sufficient Latin, with an accent.[26]

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[17] On Purkyně's philosophy, see Beneš, *op cit.* (n 1 above), *passim*

[18] Johann Gottlieb Fichte, *Uber die Bestimmung des Gelehrten · Fünf Vorlesungen* (Leipzig: Insel-Verlag, n d.), p. 41. According to a catalog preserved in the State Central Archives in Prague, Purkyně's library contained an 1806 publication of *Ueber das Wesen des Gelehrten,* as well as an 1845 edition of Fichte's *Sammtliche Werke,* and many others by Fichte.

[19] The university system was different then, of course. Prague University had four faculties juridical, medical, philosophical, and theological. Before a student could enroll at one of these faculties, he first was required to complete a preliminary introductory course in philosophy. Prior to 1824, this course took 3 years in Prague, and was also available in Litomyšl and in other places. See Eva Rozsívalová, "Studie Jana Ev. Purkyně na filosofické a lékařské fakultě v Praze [The Studies of Purkyně at the Philosophical and Medical Faculties in Prague]," *Acta Universitatis Carolinae,* 1954, *8 · Medica,* p. 24

[20] *Liber calculorum Instituti philosophici Litomisslhensis 1803-1827,* District Archives, Litomyšl: unpaginated, section titled "Philosophi Imi Anni 1807 "

[21] *Ibid.,* There were also seven "external" students who came only for the examinations.

[22] *Ibid.,* This section shows grades for both semesters.

[23] *Continuatio Matriculae . . . Litomissliensis . . . 1805,* section titled "Catalogus discipulorum gymnasii Litomisslhensis praefecto P. Liborio Pitsch Anno 1807," subheading "Schüler der ersten Klasse "

The contrast between the humdrum daily life at the school and the "vivid words" of Fichte was obvious to Brother Silverius. As he grew more mature and lived in daily contact with his fellow monks, his hero worship of earlier years faded. The regulations of the order and the decisions of his superiors grew more restrictive. The example of the two brethren who had left the order was enticing. It is not possible to ascertain with certainty who these two were, but the *Annotationes domesticae* list the departure of Bartholomaeus Perske on September 12, 1807,[27] and it is probable that he was one of those mentioned in the reminiscences.

It was a serious decision that Purkyně had to make, to exchange a life of relative comfort and security for an unknown future. It is worth noting that nothing had changed externally. He still had no patron to pay the cost of further education. Even though he had saved a little from his small salary of 400 florins a year,[28] it was not enough to see him through even one year at the university. The situation of his mother remained the same, and he suspected she would disapprove of his leaving the order. No record remains of the inner

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The Piarist record-keeper wrote at the bottom of the list of students. "Summa 144 " There are, however, only 143 names listed.

[24] His grades in Mikulov were generally quite good. *Liber calculorum iuventutis Scholarum Nicolsburgensium Normalium. Erectus A D 1779 sub praefectura P. Xaverii a S Gerardo* (to 1815) fols. 75, 81-82. *Liber calculorum, quos a professoribus et magistris suis tulerunt Nicolsburgensis Scholarum Piarum gymnasii discipuli iussu admodum reverendi patris provincialis Guidonis ab Angelis secundum statua majorum alias jam edita Erectus sub praefectura P Gregorii ab Angelis. Ineunte anno scholastico MDCCLIV* [to 1810], fols. 192, 194-195, 196v-197v, 198v-199, 100, 201, 202-203, 204v-205v, 107v-208, 209v-210, 211v-212, 214-214v. Both volumes are located in the Piarist fund, District Archives for the District of Břeclav in Mikulov

[25] Štěpánek, *op. cit* (n. 4 above), p. 64. In 1804 Broeder's texts had been adopted for use in all three years of the grammar school.

[26] There is no reference to his accent and lack of lecturing ability in this period, but ample evidence later. It seems reasonable to assume that his ability would not decline with practice For a comment on the period after 1850, when Purkyně was a professor in Prague, see E Heinrich Kisch, *Erlebtes und Erstrebes. Erinnerungen* (Stuttgart, 1914), p. 72.

[27] *Annotationes domesticae . 1786-1813*, p 387

[28] Štěpánek, *op. cit.* (n 4 above), p 66. In the eighteenth century, 1 pound sterling was about 9 florins on the London exchange. Robert J Kerner, *Bohemia in the Eighteenth Century A Study in Political, Economic, and Social History with Special Reference to the Reign of Leopold II, 1790-1792,* (New York· Macmillan, 1932), p. x. Purkyně spent part of his savings on a new suit and a pair of boots Purkyně, *Výryvky,* p. 54 Štěpánek's figure of 400 florins seems abnormally high.

turmoil Purkyně may have suffered. Purkyně himself is silent on the subject.

What had changed, then, was internal. The religious motive, important in his joining the order, was weakened by his philosophical studies and a declining respect for his superiors. The spirit of the new age, the age of the French Revolution, had infected Brother Silverius via the works of Schiller, Schelling, and Fichte. He could not be content with the life led by the Piarists of the eighteenth century, such as Dobner and Voigt, spent in the comfortable but restraining confines of the order. Although Purkyně retained his respect and admiration for these men, he now sought different goals for himself.

These goals were as yet undetermined. It would require several years of study and thinking, examination of such career possibilities as mining engineering and schoolmastering, before he would settle on medicine and physiological research. But in 1807 Purkyně realized that his future lay outside the order, and he left it to strike out on his own, full of hope and confidence.

GOITER, IODINE AND GEORGE W. GOLER: THE ROCHESTER EXPERIMENT*

LAWRENCE A. KOHN

On April 24, 1923, a little over fifty years ago, a bag containing 16.6 pounds (7.5 kilograms) of sodium iodide was lowered into the inflow of Rush Reservoir, at Rochester, New York.[1] No eye-witness of this event has been found, nor was attention paid it in any of the (then) four local daily newspapers, but it is probable that among those present were Dr. George W. Goler and Mr. Beekman C. Little. The purpose was to reduce the incidence of childhood goiter. Although chemically-related illness (scurvy, beri-beri, lead poisoning from water conduits, even goiter, ninety years earlier) had at times been singled out for attack on a wide front, this was the first recorded community act against human disease other than the infections. The story of this project brings together a bold experiment in preventive medicine, the inevitable fright and fight which follow attempts to alter the familiar, and the difficulty in biological problems of linking effects to cause.

As early as 1822 a high incidence of goiter was reported in western New York State. Timothy Dwight of Yale,[2] citing the observation of others, stated that it was common from Utica to Buffalo, but excited little concern. In 1823 Ludlow[3] spoke of its "very common appearance" in the Genesee country, by which he meant New York State west of Seneca Lake, and in the same year, O'Reilly[4] saw much of it in Rochester, and noted later (1831) that there was less. Little is to be found on the incidence in the early years of the present century, but in 1926 the Health Bureau[5] reported that 7% of Rochester school children had thyroid swelling. This compared favorably with 33% in Cincinnati or 55% in Minnesota;[6] goiter is now considered endemic only when more than 10% of pre-adolescent children are found to have palpable thyroids.

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* This study was supported in part by a grant from the American Philosophical Society.

[1] Health Bureau, Rochester, New York, *Monthly Bulletin*, May 1923, p. 2

[2] Timothy Dwight, *Travels in New England and New York* (New Haven, 1822), vol. 4, letter no. 7.

[3] E. G. Ludlow, "Notice of the Genesee Country," *N. Y Med. & Phys J.*, 1823, *2*. 65-105

[4] Henry O'Reilly, *Settlement in the West, Sketches of Rochester* (Rochester, 1838).

[5] Health Bureau, Rochester, *op cit.*, April 1926, p 2.

[6] F. C Kelley and W. C Snedden, "Prevalence and Geographic Distribution of Goitre," in: *Endemic Goitre* (Geneva, World Health Org , 1960), p. 34.

Nevertheless, then and now, the prevention of simple goiter meant more than merely preserving the normal outlines of the neck. For centuries, swollen thyroids had been treated with burnt sea sponge and other marine plants, but it was in 1812 that Courtois isolated iodine from sea-weed and it was soon shown to be an element. Prout of London[7] later (1834) claimed that he had seen the association, and after proving on himself that it was innocuous, had in 1816 obtained "striking" results (unspecified) with potassium iodide in one goiter patient. However, in 1820, Coindet[8] of Geneva (medically trained at Edinburgh), independently reaching the same conclusions, announced in a French and three Swiss journals (of one of which he was an editor) a dramatic success with—iodine. Neither he nor his followers restrained their enthusiasm for this new drug, and both in Europe and to some extent in this country it became popular therapy for a variety of diseases.[9] In 1831, Boussingault,[10] a French mining engineer and chemist working in what is now the Republic of Colombia, observed that natives who used salt extracted from iodine-rich waters were free of goiter, elsewhere prevalent. Naturally on his return to France he attempted to introduce iodized salt for goiter prevention in badly affected districts, and for a time this campaign began to spread through Europe,[11] but unfavorable reactions to the rather large doses employed in therapy, as had been observed by Coindet, and a mid-century attack on the safety of even minute prophylactic quantities[12] put a halt to these programs. When, in 1896, Baumann found iodine in the thyroid, its use revived, but unpleasant accidents again aroused fears for its safety.

The modern period began in 1909 with the brilliant studies of Marine and his collaborators, beginning with so-called "cancer" of brook trout,[13] which they proved to be a simple iodine deficiency, and leading to the announcement of the "Marine cycle," a clear anatomical explanation of the changes in iodine-deprived animal and human glands, still valid after sixty years. This led to the famous "Akron experiment"[14] of Marine and Kimball (1916-20) where goiter incidence fell abruptly in a group of school children given iodide regularly, compared with those who did not participate. Presently, from a study of rejectees from the 1918 draft, McClendon and his co-workers[15] showed that there was an inverse ratio between the frequency of goiter and the iodine content of the local drinking water: low iodine, more goiters. While there is still controversy as to the unique role of iodine deficiency, since several studies have suggested other chemical or infectious factors,[16] McClendon's maps were incontrovertible and public health officials joined physiologists to face the problem. It seemed too difficult to change our food habits; as McClendon and Hathaway remarked,[17] abundant dietary iodine was available but ". . . unfortunately, Americans do not use much sea-weed as food." A political storm seized on the Akron experiment as an invasion of personal rights, and stopped it,[18] but in Michigan in 1924 the State Medical Society, the State Board of Health and the salt manufacturers joined in an aggressive campaign which publicized the value of iodized salt, and in four typical counties produced a fall in goiter among school children from 47.2% to 1.4%.[19] Quantitatively the Rochester problem was less serious, and Willis and Goler explained:[20] "Iodized salt being our future hope, we have turned to the next best immediate source of iodine and that is the water supply."[21]

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[7] Wm. Prout, *Chemistry, Meteorology and the Functions of Digestion*, Bridgewater Treatise, no. 8 (London. Wm. Pinckney, 1834), p 100.

[8] J F Coindet, "Découverte d'un nouveau remède contre le goître," *Bibl. Univ des Sciences, Belles-Lettres et des Arts*, 1820· *14*, 190-198.

[9] Samuel Robson, "Essay on the preparations and therapeutic use of iodine," *Trans Med Soc State of New York*, 1835, *2* 1834-1835

[10] J. D Boussingault, "Récherches sur la cause qui produit le goître dans les Cordillières de la Nouvelle Grenada," *Ann. Chimie Phys.*, 1831, *48:* 41-69.

[11] J. C. M. Holman and Wm. McCartney, "Iodized Salt," in: *Endemic Goitre*, p. 413.

[12] F. Rilliet, "Quelques mots sur l'intoxication produite par l'iode administré à petites doses longtemps continuées," *Bull Acad. Nat Méd.*, 1858-1859, *24*. 23-27

[13] David Marine, "Further observation and experiment on the so-called thyroid cancer of brook trout," *J Exp. Med*, 1910, *12*· 310-322

Dr. George W. Goler was an unusual person. As Rochester's health officer from 1896 to 1932 he built a department accepted nation-wide as a model. Untiring in the pursuit of any matter of possible public health concern, he had to the community the attitude of a physician to a patient: responsiblity, a touch of the father, affection. A hint of belligerence suggests comparison with the legendary Lord Jeffrey Amherst of the college song: "He conquered all the Indians who came within his sight, and he looked around for more when he was through." He had, for example, no sympathy—in fact conducted a running war[22]—with the Milk Committee of the Monroe County Medical Society, which certified milk from certain cooperative dairies for its fat content, bacterial counts, and freedom from tuberculosis at the source, since he insisted that milk should be equally safe for the poor as for the rich. Some of his causes may have been ill chosen; he opposed milk pasteurization on the basis of his success (1897-1902) in improving its quality by inspection and exhortation.[23] It was true that carelessly produced fluid could be preserved and kept salable by the bulk process, but the importance of bovine tuberculosis in human disease had already been established and undulant fever was just over the horizon. His imagination was broad; whether or not he was first to think of distributing iodine via the water supply, he was without question first to accomplish it.

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[14] David Marine and O. P Kimball, "The prevention of simple goiter in man," *Arch. Int. Med.*, 1920, *20*: 661-672.

[15] J. F. McClendon and R. S. Hathaway, "Inverse ratio between iodine in food and drink and goiter, simple and exophthalmic," *J A.M A.*, 1924, *82*: 1668-1672

[16] For example D. W. Hand, "An epidemic of goitre," *Northwestern Lancet*, 1885, *5:* 61-62; Eduardo Gaitan, Donald P. Island and Grant W Liddle, "Identification of a naturally occurring goitrogen in water," *Trans. Assn Am. Phys.*, 1969, *82* 141-152

[17] McClendon and Hathaway, *op. cit.*, (n. 15 above)

[18] Caroline Rumbold (Secretary, Cleveland Chamber of Commerce), personal comm., 1922

[19] J. K Altland and Brock I. Brush, "Goiter prevention in Michigan: results of thirty years' voluntary use of iodized salt," *J Mich State Med Soc* , 1952, *51*. 985-989.

[20] Abner Willis and George W Goler, *Monthly Bulletin*, Health Bureau, Rochester, N.Y., May 1926, p 2

[21] In 1922, simple goiter in Rochester had a lower medical priority than in many cities Moreover, there had been an increase in hyperthyroidism in several heavily goitrous western states following the introduction of iodized salt, probably not caused thereby but increasing public reluctance to accept it (see below). While the major salt companies scrupulously adhered to the recommended 0.01% of KI, many brands put out by small manufacturers had more, less, or even none! Finally, it would—and did—take many years for the public to begin asking specifically for idoized salt when salt was purchased.

Intrepid though he was, before braving the criticism he knew would follow, he secured endorsement of the experiment from George H. Whipple, then dean of the University's medical school and soon to be Nobel laureate, from John R. Murlin, professor of nutrition, Victor K. Chambers, professor of chemistry, C. J. K. Mees, director of the Eastman Kodak Company's research laboratory and Edward W. Mulligan, the city's best-known doctor. Moreover, in Beekman C. Little he had an ally of great strength. An engineer, son of a prominent Rochester physician, Little had become interested in the municipal water department, serving as superintendent from 1901 to 1926, when he retired to become secretary and later president of the American Water Works Association. His disposition was naturally retiring, but he backed Goler at every step. His own publications were technical and scholarly discussions of distribution, analyses and costs of the program. Faced by an aggressive leader, a competent technical man and broad scientific backing, the elected City officials had little choice: they strung along, though perhaps with their fingers crossed.

For several weeks iodide was introduced daily, and Rochester tap-water showed a rise in iodine content from 1 to 20 parts per billion, which fell off rapidly when additions were stopped.[24] Eventually, they were made daily for three weeks in the spring and fall, since there is some evidence that thyroid activity is maximal at those seasons. There resulted an estimated annual intake from water of 3.1 milligrams per person or about 8 μg per day which approached McClendon's recommendation of 10 μg. This was far below present world-wide guidelines of 100 μg per day but this small supplement may have been critical in reaching a protective total. Adequate iodine intake was known to prevent goiter in children, but it was also known to arrest enlargement of glands already affected and often to restore normal appearance and endocrine function. Prevention went hand in hand with therapy of existing disease. In Rochester the statistical results were unquestionable. Surveys by school physicians[25] showed:

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[22] Milk Commission, Med. Soc Co. Monroe, Correspondence 1910- (at Rochester Academy of Medicine, Rochester, N.Y.).

[23] G W. Goler and R. R Eilinger, "Four years' experience in an attempt to make a bacterial count 100,000 bacteria per cc. a standard for municipal supply," *Public Health Papers and Reports of the American Public Health Association*, 1903, *29:* 338-340 (cited by Manfred J Waserman, "Henry E. Coit and the certified milk movement," *Bull. Hist. Med.*, 1972, *46*. p. 370).

1923	3844 goiters
1925	2010 goiters
1931	763 goiters

against a rising youth population. However, the significance of these figures should be examined critically. The annual incremental dose of iodine from the water supply was small; Goler pleaded (in the press) that citizens should drink more—up to three quarts—of water daily—(desirable but often impractical). Other and unknown factors may have been operative: while Health Bureau data on childhood goiter are unavailable before 1920, figures from the examinations for working papers (at age 14!) indicate that goiter was becoming more prevalent from 1914 to 1916 and then waned.[26] Moreover, following the 1924 Michigan example, iodized salt appeared on the shelves, and was increasingly accepted. Not all Rochesterians drank Hemlock (iodized) water; in 1923 at least two city wards were supplied by the Lake Ontario Water Company,[27] which had no truck with preventive medicine. Finally, the years 1923 to 1929 were prosperous, and even the poor had ready access to medical care in hospital out-patient departments without the blessings—and delays—of Medicaid. If a school child mentioned that the examining doctor or nurse had shown interest in his (probably her, since girls are more vulnerable) neck, it would have been natural to consult a physician, and therapeutic dosing with iodine might well have followed. Weighing these and other features, I believe that the water program deserves at least a share of the credit.

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[24] Health Bureau, Rochester, N. Y., *op cit* , May 1926, p 2.

[25] *Ibid.*, May 1932, p. 2

[26] Isidor Greenwald, "History of goiter in New York State," *New York State J. Med* , 1961, *61*: 4019-4028.

[27] Blake McKelvey, "Water for Rochester," *Rochester History,* 1972, *34* (4), p. 17

Were there any ill effects? Since 1821, a year after its first use in Switzerland, it had been known that some patients responded to iodine abnormally, by developing hyperthyroidism. This reaction, later labelled "Iod-Basedow" by Swiss and Austrian physicians, stopped French trials of iodine prophylaxis and at the close of the last century brought stern warnings from the highest medical authorities against iodides in goiter.[28] In the 1920s, there was a brief burst of hyperthyrodism in the Midwest coincident with the iodized salt program (although more probably due to the popularization of iodides in therapeutic dose). Some surgeons took fright as the over-all mortality rate for thyroid disease rose for a few years,[29] but by 1930, along with the incidence of hyperthyroidism and the need for surgery, it was far below the earlier levels.

Did this happen in Rochester? The admission and operative (at that time the only effective treatment for hyperthyroidism) records of the four major general hospitals before and after 1923 might have provided an answer, but unfortunately all data were destroyed in the late twenties. From the Health Bureau vital statistics, the over-all mortality from thyroid disease dropped 25% for the four year period 1924-1927 as compared with 1919-1923, probably from major improvement in medical-surgical treatment of hyperthyroidism. Even Oleson of the United States Public Health Service, who was unenthusiastic about water as a method of goiter prophylaxis, reported in 1929[30] that in Rochester, no case of hyperthyroidism could be blamed thereon, and for good measure, quoted Charles Mayo, then the dean of American goiter surgeons: that water iodinization was harmless.

Here and elsewhere, the public reacted;[31] the determined minority as usual made itself heard. Christian Scientists and the "American Medical Liberty League" shortly unmasked as an alias for the Scientist church, inveighed against this "poison." So did one Dr. William Henry Hay of Buffalo and East Aurora, inventor of the "Sun Diet" system of therapy,[32] which by-passed our knowledge of body physiology and alleged a cure for almost any disease. Since it held all drugs suspect, community dosing with iodine was anathema. By some strange illogical twist, another group stated that "Iodine plays into the hand of the Prohibitionists" who in the 1920s were not in need of help. On the other hand, the local home-brewing fraternity, then numerous, complained that iodized water prevented the development of a decent "head" on their beer. Protests ranged from "Iodine is making me sick" to arguments against the invasion of personal privacy and liberties.[33] A reflection of this came from England (Rochester *Democrat and Chronicle,* July 25, 1924):

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[28] Albert Kocher, "Ueber morbus Basedow," *Mitt. a. d. Grenzgeb. d Med. u Chir.*, 1902, *9* 1-304

[29] R. D. McClure, "Experiences with the thyroid problem in a Detroit clinic," *Annals Surg.*, 1927, *85*. 333-338

[30] Robert Oleson, "Iodization of public water supplies for the prevention of endemic goiter, *Treas Dept Pub. Hlth Rep* , 1927, *42* 1355-1367.

[31] Health Bureau Rochester New York, Scrap Book, 1923-1931 (On file, Local History Division, Rochester Public Library).

[32] William H Hay, *Health via Food* (Buffalo, N Y.· n. p., 1929).

Iodine Treatment of Water Evokes English Poetry

Dr. George W. Goler's insistence upon iodine dilution of the drinking water of Rochester as a preventive of thyroidism is rapidly gaining world-wide fame. Included in the report of the British Waterworks Association was the comment that: "it is contrary to ordinary medical teaching to force a whole population to drink doped water for the benefit of the minority." The statement inspired the following verse in the July 11th issue of the *Manchester Guardian Weekly,* written by one who signs himself "Lucio":

A Communist Menace

I do not live in Rochester, in Rochester, in Rochester,
  I do not live in Rochester, and on the whole, I'm glad—
For there, with gay impunity,
They take the opportunity
to dose the whole community
  Lest one or two "feel bad".

If Jones has got a chill again, a chill again, a chill again,
  If Jones has got a chill again, to dope me would be mean;
Catarrh he is addicted to—
Am I to be convicted, too,
And see my tap restricted to
  Free doses of Quinine?

Or take the case of neighbour Brown, of neighbour Brown,
  of neighbour Brown,
  Yes, take the case of neighbour Brown, a man in all respects
Most valetudinarious—
Why should I drink the various
And (maybe) most nefarious
  Of swipes that he affects?

I think I am a democrat, a democrat, a democrat,
  I think I am a democrat (or have been up to now);
But let's have no frivolity
Of physic for a polity—
This doctrine of equality
  I can't at all allow!

That same year, after a number of fires possibly incendiary in origin, a threat reached the police: "If you do not stop putting iodine in the city water, fires like this . . . will continue."[34] The writer remained anonymous, the water program continued and the fires did not recur.

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[33] Health Bureau, Scrap Book, *loc cit.*

However, elected officials must be sensitive. There was a sufficient barrage of complaint to the newspapers, the Commissioner of Public Works and the Mayor to make the latter waver in his stand; he "wondered if iodine was not being wasted in fire-fighting?" Goler promptly admitted that iodized water for bathing and dishwashing was ridiculous (though 75 years earlier Lugol in France had used iodine baths for a variety of diseases), but until iodized salt, which he advocated, became universally used, we had no choice. He re-emphasized that the cost of the program to the inhabitant was a penny a year.[35]

Meanwhile Rochester made many favorable public health headlines. Dr. William Brady, whose newspaper Health Column was immensely popular, applauded Goler and the program repeatedly, and was echoed by Ward Hutchinson, likewise a medical prophet to the laity. The New York State Health commissioner, Dr. Matthias Nicoll, junior, praised the project in the *New York Times* and suggested that other cities might well follow suit. Sault Ste. Marie began to treat its water in 1923, but stopped when iodinization of salt became heavily promoted in Michigan. A similar project in Minneapolis was blocked by the American Medical Liberty League, but in 1925 Anaconda, Montana, began to iodinize its drinking water on the Rochester spring-and-fall pattern,[36] reaching a theoretical daily sodium iodide ration of 12 micrograms, and later doubling the dose. It was given up in 1932 for unknown reasons. In the early 1930s, in Holland, after confirmation of McClendon's observations on levels of iodine in drinking water and goiter incidence, the supplies were treated in several key areas.[37] The results were dramatic. Under the German occupation the "costliness" of the program caused its abandonment, and prophylaxis in the Netherlands is now by other means. In Tadzjikastan, a provincial republic of Soviet Russia, it was proposed[38] that by combining the disinfecting property of iodine to that of chlorine, goiter prevention might be added to water purification. It seems doubtful that this was ever implemented on a siginficant scale. Neither of these efforts credits Rochester for priority, but it seems probable that the program was known to the investigators. Not all the "crank" mail was unfavorable. A letter to the *Democrat and Chronicle*[39] in 1928 showed awareness of advance in veterinary science: "It has now been discovered that iodine will cure hairlessness in pigs. It is now to be tried as a remedy for bald heads. Nobody knows what Dr. Goler may achieve for Rochester if he is let alone."

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[34] Letter, Mayor Clarence D. VanZandt in Local History Division, Rochester Public Library.

[35] Health Bureau, Scrap Book, *loc. cit.*

[36] H. W. Clarkson (Water Quality Bureau, Department of Health and Environmental Science, State of Montana), personal comm., 1973.

[37] J. F. Reith, "Kropf und Iod in Holland," *Schweiz. med. Woch.*, 1933, *62:* 791-794.

[38] V. B. Khasan, "Use of iodine for disinfection in regions with evidence of goiter," *Gigiena i Sanitariia*, 1948-49, *13.* 6-9.

Little reported annually to the American Water Works Association, and Goler plugged steadily for iodine. After two years, when the goiter count fell in school children, local opposition waned. General acceptance of the method however was cautious; in 1927 a nation-wide poll of health officers showed only 28% in favor, 18% against and 53% uncertain.[40] We should remember that many states such as those along the lower Atlantic seaboard, with high levels of soil and vegetable iodine, had almost no problem. However, Derbyshire County in England, notorious for a high incidence of goiter, produced a well-planned experiment in control which failed. In 1924 their local health officer[41] put iodine in the drinking water, and iodized sweets were provided weekly for school children to yield about 8 μg daily total. Surprisingly, at the end of the year, "treated" children showed more visible swellings than the controls! Epidemics of simple goiter, suggesting another origin, have frequently been noted when iodine intake was adequate, but the Derbyshire results have never been explained. The American Water Works Association declared: "It is not the function of water-works authorities to distribute medicine as long as there are available other means."[42]

The attack on iodine never truly died. In October 1931 the Rochester *Times-Union* paraphrased a United States Public Health Service release, probably of Oleson's, which, while lumping the treatment of established goiter with its prophylaxis, deprecated continuation of the program. Predictably, Goler replied, but the following summer (he was then 68 years old) he resigned as health officer, chiefly because of political interference in his bureau by the city administration (which in turn was to be ousted less than a year later). Those were deep depression years; taxes were only fractionally collectable and budgets were being pared to the bone. In the fall of 1932 many city employees were discharged, or took salary cuts or days off without pay. Even the meager $4000 cost of the iodine program looked large when school nurses and city engineers were being fired.[43] Mr. Alexander Gray, later superintendent of the water works, recalls that treatment was going on in June 1932 when he started work at Rush Reservoir, but iodine addition was probably already halved. It is almost certain that in 1933 the program was quietly dropped.

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[39] Health Bureau, Scrap Book, *loc. cit.*

[40] Olesen, *op. cit.*, (no. 30 above).

[41] W. N Ash, "Goitre," *J. State Med*, 1926, *34*· 627-640

[42] Editorial, *J. Amer. Water Works Assn.*, 1932, *24*· p 1787.

[43] Joseph W Barnes (City Historian, Rochester, N. Y), personal comm., 1973.

Twenty-five years later it became desirable to fluoridate Rochester's water. With memories of the furor over iodine, this was made public several years before the target date. On the recommendation of Health Officer Albert D. Kaiser[44] the city Council gave approval in the summer of 1949. Three years later mutterings against it rose to howls when implementation was at hand.[45] Opponents joined to form a "Citizen Voters' Health League" apparently led by the chiropractors. Among new arguments were that it would be "socialized medicine,"[46] and from at least one sportsmans' club, that fish would suffer in treated waters. When addition of fluoride was imminent, Dr. Kaiser employed strategy:[47] he announced a specific date, and when complaints jammed the Health Bureau switchboard ("My morning coffee is bitter," "We cannot drink this ill-tasting water," "My cellar pipes have rusted out overnight"), they were answered with calm reassurance that no fluoride had yet been added. A few days later, unpublicized, it passed unnoticed. Through the decade, rumblings from the dissidents continued, but they now appear muted.

Current levels of iodine intake in Rochester are not precisely known, though in 1969 calculations from indirect evidence averaged 300 micrograms daily for the north-east section of the United States.[48] As elsewhere in the country, only about half the table salt sold at retail is iodized, and not all pediatricians trouble to recommend its use. Organic compounds have largely superseded iodates as "dough conditioners" in commercial baking. Lacking recent analyses, there is no reason to think the local drinking water provides more than the microgram per liter found a half-century ago. A significant dose, however, comes from milk: for a number of years dairy herds have been fed iodized salt (for the health of their calves)[49] and iodine based "sanitizers" are increasingly popular in milking parlors.[50] Store-purchased milk in the summer of 1973 showed over 300 micrograms per liter; a pint daily would suffice. Curiously, Americans now *do* eat a certain amount of sea-weed in the form of alginates, which are added to many prepared foods, but their iodine content is low and the concentration as they reach the table has small significance.

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[44] Rochester, N. Y., *Democrat and Chronicle*, May 27, 1949

[45] Rochester, N Y , *Times-Union*, August 4, 1952

[46] Rochester, N. Y., *Democrat and Chronicle*, August 7, 1952.

[47] *Ibid* , February 8, 1953.

[48] T H Oddie, D. A Fisher, W. M McConahay and C. S. Thompson, "Iodine intake in the United States: A reassessment," *J. Clin. Endocr. & Metab* , 1970, *30*. 659-665.

[49] R H Hencken, J H. Vandersall, M. A. Oskarsson and L R Fryman, "Iodine intake: Relation to milk iodine and performance of dairy cattle," *J Dairy Sci.*, 1972, *55* 931-934.

[50] Walter Webster (Agway Corp , Avon, N Y), personal comm , 1973.

The incidence of simple goiter in the Rochester school population is also uncertain, since after careful consideration, routine physicals by Health Bureau physicians were abandoned ten years ago. However, in the survey which justified this decision, Dr. Ruth Lawrence[51] found no goiter in 1000 first to third graders she examined personally; one admits that this is not the peak age for the disease. In 1973 five busy pediatricians, one of whom sees many endocrine referrals, could recall over a two-year span only eight simple goiters among an estimated 8000 children of all ages and widely spread social classes. As compared with 1923, it is certainly far less common.

Even without absolute proof that it was iodine in the water which reduced goiter in Rochester in the twenties, the effort was notable. It did no harm, it set an example which elsewhere succeeded incontrovertibly, and it showed that an ingenious and courageous health officer can find new ways to master old problems.

Addendum: Reference should be made to a study made in 1963-64 by Freund and his associates[52] on the addition of iodine to a Florida prison water supply, for disinfectant purposes. The concentration reached was at first 1 mgm, later 5 mgm/liter, and this was maintained for a number of months. The subjects (of both sexes) who drank the water showed a fall in PBI and T4 levels, but, although no clinical data are given, apparently suffered no changes in the thyroid or their general health.

Acknowledgment

For help in this study I am grateful to many people, especially to the following: Miss Sandra L. Markus, Mrs. Lucretia W. McClure and Mr. Philip J. Weimerskirch of the Edward J. Miner (Medical) Library of the University of Rochester; Miss Doris M. Savage and the staff of the Local History Division, Rochester Public Library; Mrs. Mary Sandt, former, and Mrs. Norma Somers, current Librarian at the Rochester Academy of Medicine; Dr. Joseph W. Barnes, Rochester City Historian; Miss Marian M. Allen; Dr. Edward C. Atwater; the late Miss Helen de P. Little; Dr. Wendell C. Ames and Dr. Margaret L. Rathbun, formerly Director and Assistant Director, Monroe County Health Bureau; Mr. Roger McPherson, formerly Superintendant of the Rochester Waterworks.

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[51] Ruth A. Lawrence, M. D., personal comm., 1973

[52] G. Freund, W C Thomas, Jr., E D. Bird, R N. Kinman and A P. Black, "Effect of iodinated water supply on thyroid function," *J Clin. End & Met.*, 1966, *26*. 619-624.

SMOTHERING AND OVERLAYING OF VIRGINIA SLAVE CHILDREN: A SUGGESTED EXPLANATION

TODD L. SAVITT[*]

Infant mortality in ante-bellum Virginia was extremely high. During the decade of the 1850s between sixteen and twenty percent of all deaths in the state occured among children under the age of one year. The major causes of death included croup (diphtheria), diarrhea and dysentery, whooping cough, pneumonia, scarlet and other types of fever, and suffocation (also referred to as smothering and overlaying).[1] Since the 1850s medical science has substantially reduced the incidence of all but two of these diseases—pneumonia (which is today responsible for up to 27% of infant deaths between 1 and 11 months)[2] and suffocation. With regard to the latter there is strong evidence to indicate that many deaths which physicians and planters of the 1850s ascribed to suffocation, smothering and overlaying (almost all slaves) were actually cases of the disease presently known as Sudden Infant Death Syndrome (SIDS) or "crib death." The Second International Conference on Causes of Sudden Death in Infants (1970) defined SIDS as:

> The sudden death of any infant or young child which is unexpected by history, and in which a thorough post-mortem examination fails to demonstrate an adequate cause for death.[3]

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[*] The author is indebted to his wife, Carole L. Savitt, for calling to his attention the article which led him to connect Sudden Infant Death Syndrome with overlaying, and to Professor Willie Lee Rose, now of Johns Hopkins University, for originally posing the problem of slave smothering This publication was supported in part by NIH Grant 1 RO1 LM 02071 from the National Library of Medicine.

[1] Virginia, Register of Deaths (manuscript on microfilm), 1853-1860, Southampton County, Augusta County, Petersburg Town, Staunton Town, at Virginia State Library, Richmond, Virginia; United States, Bureau of the Census, *Mortality Statistics of the Seventh Census of the United States, 1850* (Washington, D.C., 1855), 290-295. The infant mortality rate for the entire country, by calculation from the 1850 Census, was 16.4%, and for the slaveholding states, 18 3%.

[2] United States, Department of Health, Education & Welfare, *Vital Statistics of the United States, 1967*, IIA, 2-31.

[3] Abraham B. Bergman, J. Bruce Beckwith, C. George Ray, eds , *Sudden Infant Death Syndrome, Proceedings of the Second International Conference of Causes of Sudden Death in Infants* (Seattle, 1970), 18.

[4] Marie Valdes-Dapena, *et al*, "Sudden unexpected death in infancy: A statistical analysis of certain socioeconomic factors," *Journal of Pediatrics*, 1968, *73*: 388; John W. Melton, *et. al.*, "Sudden and unexpected deaths in infancy," *Virginia Medical Monthly*, 1968, *95*: 63. The 45% figure was reported in Abraham B. Bergman, *et. al.*, "Studies of the sudden infant death syndrome in King County, Washington. III. Epidemiology," *Pediatrics*, 1972, *49*. 861.

It is, at present, responsible for between 10 and 30 percent (45% in one study) of deaths between the ages two weeks and eleven months, clearly establishing it as a leading killer of children under one year of age.[4]

Typical cases of overlaying share several of the unmistakable hallmarks of SIDS. Compare a twentieth-century physician's description of the latter with an overseer's and a planter's remarks on the former:

> An apparently thriving two-month-old boy is found dead face down in his crib. Except for a brief mild rhinorrhea during the previous week, the child had been in excellent health from birth. At a routine well-baby check by the family doctor a few days prior to the event, he appeared robust and free of problems. On the night of death, he took his formula eagerly and was put down in his crib about 10 P.M. His mother looked in before retiring; he was sleeping peacefully on his abdomen with his face to the side. When found at 6:30 A.M., he had obviously been dead for several hours.[5]
>
> I [Nathaniel Ryan, overseer] am sorry to inform you [Edmund Hubard, slaveowner] that Matilda has lost her youngest child she over laid it, it was well and hearty when she went to bed and found it dead sometime in the night.[6]
>
> Last week [wrote Robert Hubard to his brother, Edmund] Tilla overlaid/when asleep/and killed her youngest child—a boy 6 or 7 months old. This was no doubt caused by her own want of care and attention.[7]

Most people, both today and 120 years ago, automatically assume that the fault lies with the parent and that death is preventable. These are false assumptions. Physicians now know that children cannot be smothered so long as there is any circulating air available, even when the infant is beneath the covers or wedged against the sleeping mother.[8]

In addition to this descriptive similarity between SIDS and overlaying, there is a remarkable epidemiological correspondence, both in age and seasonal variation. Crib death does not occur among children of all age groups. Those under two weeks and over one year are almost entirely spared; those between two weeks and four months are prime targets. In two recent studies, conducted in King County (Seattle), Washington, and Richmond, Virginia, 85% and 63% respectively, of the victims were between one and four months old. The majority of these deaths occurred during the colder six months of the year (October through March).[9] The figures obtained from an analysis of the manuscript Register of Deaths for twenty-six Virginia counties, between 1853 and 1860, corroborate the King County and Richmond studies. Of the 226 children whose demise the parent or slaveowner attributed to overlaying, smothering or suffocation, 54% were between one month and four months of age. Fifty-six percent of the deaths occurred between October and March.[10]

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[5] J. Bruce Beckwith & Abraham B. Bergman, "The sudden death syndrome of infancy," *Hospital Practice*, November 1967, *2:* 44

[6] Nathaniel Ryan, Saratoga, Buckingham County, Virginia, to Edmund W. Hubard, Washington, D C., 15 December 1841, Hubard Papers (Southern Historical Collection, University of North Carolina, Chapel Hill, N.C).

[7] Robert T. Hubard, Rosny, Buckingham County, Virginia to Edmund W. Hubard, Washington, D.C., 21 December 1841, Hubard Papers (Southern Historical Collection, University of North Carolina, Chapel Hill, N.C.).

[8] Beckwith & Bergman, "Sudden death syndrome," 50-51.

The relative incidence of overlaying was much lower in ante-bellum Virginia (about 4% of infant deaths) than that of SIDS in present-day America (10 to 30% of infant deaths) for several reasons. Since people did not understand the cause of sudden infant death they usually classified it as "unknown" in

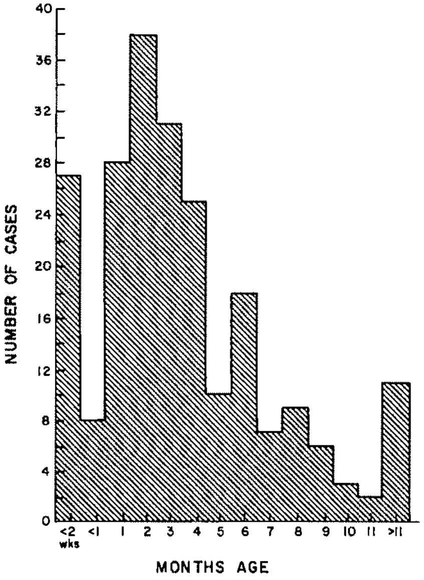

Figure 1. The age distribution of 226 cases of smothering, suffocation and overlaying in Virginia, 1853-1860.

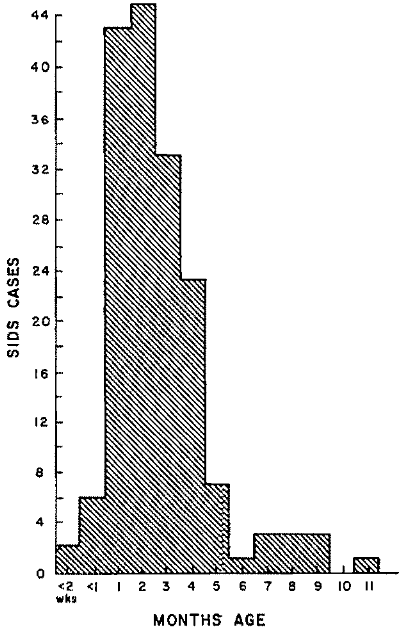

Figure 2. The age distribution of 170 SIDS cases in King County, Washington, 1965-1967. [From Bergman, *et. al.*, "Studies in the sudden infant syndrome in King County, Washington. III. Epidemiology," *Pediatrics*, 1972, *49:* 863.]

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[9] Bergman, *et al.*, "Studies of sudden infant death syndrome in King County," 863, Melton, *et al*, "Sudden and unexpected deaths in infancy," 64-65

[10] Virginia, Register of Deaths (manuscript on microfilm), 1853-1860, Accomac, Albermarle, Amelia, Arlington, Augusta, Bedford, Botetourt, Brunswick, Cumberland, Essex, Fairfax, Fauquier, Floyd, Frederick, Greene, Greensville, Halifax, Hanover, Henrico, Henry, Isle of Wight, Lancaster, Pittsylvania and Southampton Counties; Petersburg and Staunton Towns, at Virginia State Library, Richmond, Va. The oldest child in the survey to die of suffocation was six years.

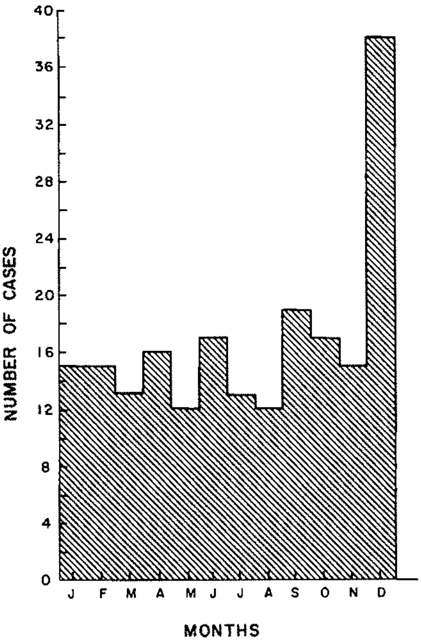

Figure 3. The months of death of 202 cases of smothering, suffocation and overlaying in Virginia, 1853-1860.

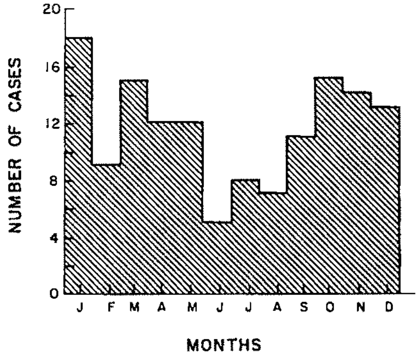

Figure 4 The months of death of 170 SIDS cases in King County, Washington, 1965-1967. [Adapted from Bergman, *et al.*, "Studies in the sudden infant death syndrome in King Country, Washington, III. Epidemiology," *Pediatrics*, 1972, *49:* 863.]

most mortality lists. We still today cannot explain this phenomenon of unexpected death in young babies, but rather than lump it with other unknown causes of death, medical scientists have provided us with the descriptive term, "Sudden Infant Death Syndrome." Another important factor was the marked under-reporting of white suffocation deaths (only about 2% of the total from this cause), probably due in part to the social stigma associated with child smothering. White parents and physicians likely attributed many sudden deaths among these children to teething, pneumonia, and, most often, to "unknown causes." Though present studies indicate that blacks do in fact have a higher incidence of SIDS than whites, and that all members of lower socio-economic groups regardless of race exhibit a similar tendency (probably due to sanitary conditions and overcrowding),[11] the 98% figure for antebellum Virginia blacks (229 of 232 smothering deaths) is much too high. It is interesting to note that in the latest available Department of Health, Education and Welfare national survey, under-reporting continues to be a problem. Less than half of the estimated infant deaths attributable to SIDS (based on recent epidemiological studies) were classified as such on 1968 Death Certificates. Among the reasons for this were the lack of acceptance of SIDS as a disease entity, and subjectivity on the part of the local certifier, a condition remarkably similar to that which existed in ante-bellum Virginia.[12]

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[11] Valdes-Dapena, *et al.*, "Sudden unexpected death in infancy," 390-392

Smothering was not a problem confined solely to the plantation, though one early Southern writer asserted that the peculiarities of the slave system increased its incidence:

> Not a few [babies] are overlaid by the wearied [slave] mother, who sleeps so dead a sleep as not to be aware of the injury to her infant.[13]

Overlaying occurred in the North, where it was reported with much less frequency, again no doubt due to social pressures, and also in European countries.[14]

Certainly not all cases of suffocation among slave children can be attributed to crib death. Nineteenth-century physicians rarely performed autopsies and probably misdiagnosed a percentage of all their cases simply because they lacked the requisite knowledge. In addition, some slave mothers did actually commit infanticide,[15] though without their masters' knowledge. The information presented here, however, indicates that the majority of infant deaths attributed to suffocation, smothering and overlaying in ante-bellum Virginia (and the rest of the nation), were actually cases of Sudden Infant Death Syndrome.

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[12] Noel S. Weiss, *et al*, "Problems in the use of death certificates to identify sudden unexpected infant deaths," *Health Services Reports*, 1973, *88:* 555-58

[13] Thomas Affleck, "On the hygiene of cotton plantations and the management of Negro slaves," *Southern Medical Reports*, 1851, *2*· 435

[14] Bureau of the Census, *Mortality Statistics* . . *1850*, 28.

[15] See, for instance, the case of Opha Jane in the Powhatan County, Virginia, Order Book #29, 1851-1856, p. 501 (7 April 1856), at Virginia State Library, Richmond, Va.

TEXTS AND DOCUMENTS

MATHEOLUS OF PERUGIA'S COMMENTARY ON THE PREFACE TO THE APHORISMS OF HIPPOCRATES

PEARL KIBRE AND NANCY G. SIRAISI

The following previously unedited commentary on the preface to the *Aphorisms* of Hippocrates[1] by Matheolus of Perugia, professor of medicine at Padua in the second half of the fifteenth century,[2] provides an interesting and contemporary view of one aspect of medical teaching in that century in one of the leading medical faculties of Europe. The *Aphorisms*, the best known of the Hippocratic writings and the so-called physician's bible down to the nineteenth century, had provided a basic text in medical teaching long before the establishment of universities.[3] The work was, as Matheolus himself notes, the first in the syllabus of medical writings to be lectured upon and studied after the introductory reading of the *De lege* and, according to earlier writers, the taking of the Hippocratic Oath.[4] Matheolus was thus proceeding in accordance with a long established tradition in his exposition of the *Aphorisms*. Moreover, he further demonstrated his adherence to that tradition by the fact that the translation that he utilized was not that of one of the contemporary humanists, but the widely disseminated translation from the Arabic made by the monk of Monte Cassino, Constantinus Africanus, at the close of the eleventh century.[5] Also in his exposition of the text Matheolus followed the formula which had been transmitted probably from the Alexandrian school of physicians and which was already utilized in the commentaries on medical texts in the pre-Salernitan era.[6] That is, he set out to cover six formal questions relating to (1) the title of the work; its definition and efficient cause, or author; (2) the author's intention; (3) the utility of the work; (4) its arrangement or order; (5) its method of teaching *(via doctrine);* and (6) the division of the work.

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[1] The work is contained in ms Codex latinus monacensis 350, 15th cent , fols. 69r-73r, a manuscript of 157 folios in the hand of Hartmann Schedel who had been Matheolus' student at Padua The contents of the codex reflect the diversified interests of Schedel himself and of the milieu of the Paduan Faculty of Arts and Medicine responsible for his cultural formation. In addition to medical orations by Matheolus, the codex includes a dialogue by Leonardo Bruni and other humanist writings (see *Catalogus codicum latinorum Bibliothecae Regia Monacensis*, I,1 [1892], 90). Photocopies of the manuscript are in the possession of Professor Kibre, at the Graduate Center of the City University of New York.

[2] For the rather scanty information available about Matheolus' career, see G Tiraboschi, *Storia della letteratura italiana* (Florence, 1807), VI, 2, 454-458, and M. E Cosenza, *Biographical and Bibliographical Dictionary of the Italian Humanists* (Boston. G. K. Hall & Co , 1962), III, 2235 For other works by Matheolus of Perugia, see the index of L Thorndike and P Kibre, *A Catalogue of Incipits of Mediaeval Scientific Writings in Latin*, new and augmented edition (Cambridge, Mass.: Mediaeval Academy of America, 1963), henceforth cited as TK.

[3] On the *Aphorisms*, see P Kibre. "Hippocratic Writings in the Middle Ages," *Bulletin of the History of Medicine* (henceforth cited as *BHM*), 1945, *18:* 371 ff , and especially 380-386; also her "Hippocrates Latinus" appearing in *Traditio* (1975-).

[4] See in this regard the Ps. Oribasius commentary on the *Aphorisms* of which mss. are extant from the ninth and tenth century (A. Beccaria, *I codici di medicina del periodo presalernitano* [Rome, 1956], 462); for Latin translations of both the *Oath (Iusiurandum* or *Sacramentum)* and the *Law (De lege)*, Kibre, *BHM*, 1945, *18:* 401, and "Hippocrates Latinus."

In the commentary and in the brief passages following the preamble, which in all probability are also by Matheolus, the author neatly draws attention to the importance of teaching *(doctrina)* as well as of experience or practice in the training of physicians. In regard to the former, he refers to preparatory studies in the liberal arts and to the writings of earlier authorities and physicians. Among these, in addition to some nineteen of the works of Hippocrates, he names the writings of such well-known authorities as Aristotle, Dioscorides, Galen, Isidore of Seville, Rasis, Haly Abbas, Mesue, Avicenna and Averroes, and mentions among his own earlier contemporaries Niccolò Falcucci, Marsiglio di Santa Sofia, Ugo Benzi of Siena, and Jacopo da Forlì.[7] In view of such abundant fare he also justifies the importance of the brevity of the *Aphorisms* as a shortcut and easy aid to the memory. For if the physician had to read or re-read vast tomes on the subject when confronted by a specific case his patient might die before the reading was completed.

The importance of actual practice and particularly that gained in association with an experienced physician is stressed particularly in the sections following the preamble of the *Aphorisms*. To become a good physician, for example, the student is informed that he should have associated himself with good and skilled physicians and observed correct practice. Other significant features of this commentary will doubtless impress themselves upon the reader. To attempt to include them here might, to use Matheolus' paraphrase of an old adage, cause even good Homer to nod.

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[5] Kibre, *BHM,* 1945, *18:* 380-384.

[6] P. Courcelle, *Les lettres grecques en occident de Macrobe à Cassiodore* (Paris, 1948), 387.

[7] Falcucci (Falcutius), d *ca* 1412, was the author of a great tome on medicine *(Sermones medicinales,* see TK 915 and A C. Klebs, *Incunabula scientifica et medica* [Bruges. St. Catherine's Press, 1938, henceforth cited as Klebs], 389, 1-5) For an account of him, see G Sarton, *Introduction to the History of Science* (Baltimore: Williams and Wilkins for the Carnegie Institute of Washington, 1927-48), III, 2, 1194-95 On Marsiglio di Santa Sofia (d 1405), Ugo da Siena and Jacopo da Forlì (d. 1413), all of whom also commented on the *Aphorisms,* see Kibre, *BHM,* 1945, 18 382-383 and notes 68-69, with bibliography there cited. For Ugo da Siena, see further Dean Putnam Lockwood, *Ugo Benzi Medieval Philosopher and Physician, 1376-1439* (Chicago Univ of Chicago Press, 1951), and for Jacopo da Forlì, A. Gloria, ed , *Monumenti della Università di Padova, 1318-1405* (Padua, 1888), I, 437-439

[Matheolus of Perugia, Introduction to the *Aphorisms*]

[fol. 69r] Life is short. To expound, with God's help, the *Aphorisms* of Hippocrates, I shall offer for the introduction to the work principles drawn from the views expressed by Averroes in the first book of the *Physics,*[8] and by Haly Abbas in the first book of the *Theorica.*[9] Let us therefore consider six questions: first, what is the title of the book; second, the author's intention; third, the book's usefulness; fourth, the arrangement; fifth, the method of teaching; and sixth and last, the division.

The descriptive title of the book is as follows: Here begins the book of Aphorisms that Hippocrates of Cos set forth on medicine. It is called *afforismus* from *afforico,* which is the same as to separate, as Mesue stated in the *De appropriatis.*[10] He referred to Hippocrates "in the book of separate sayings," intending to designate this book. An aphorism is also defined in another way, as can be gathered from Galen in the commentary on the prologue, namely as a short discourse replete with deep meaning.[11] Isidore reechoed this in the *Etymologies,* VIII,3, when he asserted that an aphorism is a short saying encompassing the essential meaning of a given proposition.[12] An aphoristic doctrine thus encompasses much meaning under few words. Similarly Galen in the first book of the *De elementis* indicated that in the brevity of the ancients' speech might be found the crux of admiration for them.[13] One may deduce Galen's definition from the commentary on Book I of this work, when he asserts that many ideas may be expressed wholly in aphoristic brevity. He also states this in the commentary on Book IV of *De regimine acutorum.*[14]

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[8] [. . Aristotle . De physico auditu libri VIII cum veteri Averois Commentario .] (Padua [1472; Klebs 93.1]) fol. [1r], lists eight headings under which a work may be considered For manuscripts and editions of this work, see TK 762.

[9] Haly Filius (ben) Abbas, *Regalis dispositio,* or *Liber totius medicine* Pars I, Theorica, Pars II, Practica See TK 1093, 1611; Lyon, 1523, at the New York Academy of Medicine, I, 3, fols. 7v-8v, also provides a list of headings. Haly's work is divided into ten books on theory and ten books on practice

[10] This does not appear to correspond to the title of any work of Mesue (d 1015?), but it may perhaps refer to part 2 of his *Grabadin* (Pavia, 1478, Klebs 680.7), fol 7r, which begins "Summe secunde huius grabadin incipit in quo distinguitur medicine appropriate egritudinibus singulorum membrorum "

[11] The Latin version of Galen's commentary on the *Aphorisms,* in the translation by Constantinus Africanus, is printed in the *Articella* (Venice, 1487; Klebs 116 3) The statement referred to occurs on fol 9r. The medieval Latin versions of several widely used Hippocratic and Galenic medical tracts are collected in this once popular handbook In the remainder of this article several of these treatises are cited from this edition, since it is as convenient for the modern scholar as for the fifteenth-century physician

[12] Isidore of Seville, *Etymol* , actually, it occurs at IV, 10, 1, on medical books: "An aphorism, aforismus, is a short discussion describing the whole meaning of the subject proposed" (Isidore of Seville, *On Medicine* [*Etymol.* IV], tr William D. Sharpe, *Transactions of the American Philosophical Society,* 1964, n.s. *54*(3): 62

[13] For ms texts of the *De elementis,* see TK 984, 1269, 1274, printed in the *Opera,* 1490, I, 217r-235; 1515,

From the descriptive title is made clear what the author's name is and that he is the efficient cause of the succeeding commentary. Hippocrates of the island of Cos was the son of Heraclides, as Galen notes in the first book of *De regimine acutorum* [at the word] *ptisana.*[15] He is sometimes called the son of Euclid [in some sources]; of these, the letter to which Marsilius refers is the first.[16] But there were many men by the name of Hippocrates. For example, in Ameria,[17] a town in Roman territory, an urn was found and is still extant, which had been made in honor of Hippocrates. On it was inscribed this epitaph: Hippocrates: Curidis L. Meocratis, sister of Hippocrates. It is certain that this epitaph could not have referred to Hippocrates of Cos. As for Isidore's statement that Hippocrates was born of Esculapius,[18] his father, I think that to be said figuratively, because Hippocrates brought medicine back to light from the obscurity in which it had been lying hidden for a long time, ever since the death of Esculapius. This achievement is indeed highly praiseworthy in the judgement of all, and especially of Galen, as he indicated in various places. Indeed, Isidore bears witness that Hippocrates brought medicine back to light and, as we say, revived it, five hundred years after the death of Esculapius. Moreover many very learned men think that Hippocrates was an older contemporary of Democritus. [fol. 69v] The statement of others, however, that Hippocrates was the disciple of Democritus is false, as is clearly apparent from Hippocrates' own characteristic letter to Democritus. This indeed is clear from the fact that he himself refers to the men of Abdera, who summoned him to cure Democritus, whom they believed to be insane.[19]

The second point to be discussed is the author's intention. The intention of Hippocrates is this: he wished briefly and in a few words encompassing much meaning to explain the conditions curable by medicine. From this is apparent

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I, 22r-28. The passage cited is on p. 45 of Galen, *Opera . . .* (Basel, 1536, at the New York Academy of Medicine).

[14] Regarding Galen's commentary on the *Aphorisms,* see Kibre, *BHM,* 1945, *18:* 389-390. Both this work and Galen's commentary on the *Liber regiminis acutorum* of Hippocrates are printed in *Articella* (1487), where Book IV of the *Liber regiminis acutorum* begins on fol. 108r.

[15] See, for example, *Articella* (1487), fols. 78v-79r.

[16] Presumably Marsiglio di Santa Sofia. The reference has, however, not been traced.

[17] That is, according to Graesse, Amelia, a town in the papal states (J.G. Th. Graesse, *Orbis Latinus* [Dresden, 1861], p. 11).

[18] Isidore of Seville, *Etymol.* IV 1,3 "The founding of medicine."

[19] On Democritus and the Epistle regarding him, see TK 455; 1256; and P. Kibre, *BHM,* 1945, *18.* 408-409.

what is, and in what manner it is, or ought to be, the subject of this book and indeed of medicine as a whole. Although the subject, among philosophers and logicians, is understood in many ways, for the present it is to be taken principally for any commentary considered in science. Thus because the principal intention of a science relates to it universally, as it were, the intention of the practitioner is concerned with the materials which that work involves. Hence those matters that relate to the subject and its parts are demonstrated in the science. Diseases and all other matters involved in that science are taken into consideration. We refer to just such a reduction — and it does not exceed the capacity of the science in question — when we say that the mobile body *(corpus mobile)* is the subject of natural philosophy, numbers [quantity] of arithmetic, and magnitude of geometry. Understanding the term "subject" in this way, we may say that the subject of this book is the human body, considered as living and treatable in relation to its general and specific diseases. Included in this book are not only general rules, but also specific ones relating to various kinds of disease. Therefore I have defined the subject as: that which relates to sickness; is capable of being placed under a neutral disposition; and is subject to treatment by the physician, as is generally held. For this my *questio* on the subject of medicine should be consulted.[20] And hence the material cause of this science is apparent. For since science as such does not contain matter, the only way one science can be distinguished from other sciences is by the subject, although it is sometimes allowable to consider its integral parts as if they constituted its matter.

Third is the utility of the work. This is sufficiently apparent from the explanation of intent in the text: "Since man's life is short and the art of medicine long, it was necessary and useful to compose this aphoristic doctrine." Wherefore Galen says in his commentary, speaking of this science that this book has proven extremely helpful to those desirous of learning a long art in a short time.[21] Another aspect of the same thing is that it is of prime usefulness in committing to memory those things that one has learned and in recalling those things that one has, after learning them, forgotten.[22] Such is the manner in which this type of teaching *(doctrina)* acts. From this it is apparent that Nicholas[23] and others who wrote great tomes *(volumina)* on medicine are not very helpful, especially to the physician who wants not only to understand medicine but also to practice it. For the patient would die before one could read completely all the material relating to his disease.

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[20] This work by Matheolus has not been located.

[21] *Articella* (1487), fol 9r

[22] Matheolus was much concerned with the art of memory His only printed work is the *Tractatus clarissimi philosophi et medici Matheoli Perusini de memoria* (Padua [*ca* 1475], Klebs, 674.3; and other early editions)

[23] Nicholas is presumably Niccolò Falcucci (see note 7 above), who as noted, was the author of a series of extremely prolix *Sermones septem medicinales* (Klebs 389 1-5).

Fourthly, what is the arrangement? [fol. 70r] This book is, indeed, the first in the series of books that Hippocrates composed on medicine. It contains general information on conditions that are curable by medicine and also on others in particular instances. In the usual order of teaching the general precedes the particular, as Averroes notes in his commentary on the first book of the *Physics* and also in the prologue of the same work.[24] And Galen [says the same thing] in his commentary on the third part of the above work [i.e. the *Aphorisms* at the words] *Constitutiones anni.*[25] The books, moreover, composed by Hippocrates are various. First may be noted the introduction to medicine, that is the *Libellus de lege,*[26] which teaches the principles to which those who are about to study medicine should adhere. This is the work which Galen calls to mind in his commentary on the first part [of the *Aphorisms*].[27] The other works are of diverse nature, touching upon various medical matters, and particularly such as pertain to the foreknowledge of the practice of medicine as does practice itself, as Averroes notes in the first book of the *Colliget* a little beyond the preface.[28] For he says that there are three things that the practitioner should consider, namely the subject, the aim and the instruments through which that aim is attained. Concerning the parts of the body, therefore, there is one general consideration with which the book of *Aphorisms* deals. This specifically pertains to the subject of medicine, namely the human body and its members, for which Hippocrates composed the book *De anothomia,*[29] as Galen asserted in his discussion [at the words] *Fetus maris.*[30] And because the human body has matter both immediate and remote, Hippocrates prepared the book *De humoribus,*[31] about which Galen [wrote] in Commentary I of this work. Hippocrates also [wrote] a tract on the elements which he himself entitled *De natura humana,*[32] as Galen noted in his own book *De elementis*.[33] Hippocrates also, moreover, wrote on the generation of the human body,[34] a work that Galen discussed in his book *De spermate*.[35]

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[24] Averroes, *Physics* (*ca* 1474), fols. 1r, 2v

[25] *Articella* (1487), fol 22r

[26] "Incipit liber Hyppocratis de lege qui introductorius dicitur . . ," *Articella* (1487), fol [2] 11r.

[27] *Ibid.*, fol. 9r.

[28] Averroes, *Colliget* (pr with the *Teisir* of Avenzoar, Venice, 1496; Klebs 127 2) I, chapter 1, fols. 45v-46r. For other editions and MSS, see TK 144, and 762.

[29] For Hippocrates, *De anothomia,* or "Epistola de anathomia," see Kibre, *BHM,* 1945, *18.* 395 and note 145.

[30] For the remark of Galen alluded to, see *Articella* (1487), fol. 34r.

[31] TK 1181, and Kibre, *BHM,* 1945, *18* 397-398, and notes 166-168.

[32] For manuscripts and editions of this work, see TK 1236 and Kibre, *BHM,* 1945, *18.* 397, notes 161-166; Kleb 826. 1-3. Hippocrates, *De humana natura vel de elementis liber* is printed in *Articella* (Lyon, 1515; at the New York Academy of Medicine), fols. lxxviii-lxxxr.

According to Galen's commentary II, [Hippocrates] dealt with the aim of this science, which is health, not formally but by determining the consequences, namely of diseases and of the neutral dispositions of the human body. He also spoke about diseases contingent upon the common impression of the air, and he did this in the *Liber epidemiarum*.[36] Furthermore, he wrote the book *De aere et aqua et regionibus*,[37] for the most part on those diseases which occur as a result of the six non naturals.[38] These diseases are said to be eleven in number. He further composed a book on wounds *(De vulneribus)*[39] alluded to in the sixth part of the *Aphorisms* at the statement *Quicunque gibbi*.[40] Galen refers to this in his commentary [on this passage]; Galen also refers to a work *De cura empiantis* in the commentary on the same book.[41] Another work is *De fractura cranei*,[42] as Galen notes in *De ingenio sanitatis*.[43] Morover Hippocrates wrote on the diseases of women in the fifth part of the *Aphorisms*.[44] In his commentary 45,[45] that is, on the things by which the body is moderated, he also determined symptoms which he set forth, and especially those in relation to prognosis, a work of the greatest utility. On this topic he prepared the *Liber pronosticorum*[46] and the tract *De secretis pronosticis,*[47] also the first letter to King Antiochus[48] on conservation of health. [fol. 70v] On treatment he wrote the *De regimine auctorum.*[49] Moreover, on the means by which sickness is removed and health restored, he prepared a book *De caldo et frigido,*[50] another on food *(De cibo),*[51] and still another on medicines *(De farmaciis).*[52] The works of Hippocrates therefore number nineteen. My principal proposition is thus apparent: namely, that the book of *Aphorisms* is the first among these in the order of teaching with the exception of the *Libellus de lege.*

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[33] For Galen's *De elementis*, see TK 1269; and for the remark of Galen alluded to see his *Opera* (1536), p 41

[34] See Kibre, *BHM*, 1945, *18* 394-395; TK 1465, 1497. The *De natura fetus* is printed in the *Articella* of 1515 at fols lxviir-lxxiir.

[35] For Galen's *De spermate*, see TK 1183 and 1520-21

[36] For the *Epidemics* or *Liber epidemiarum*, see TK and Kibre, *BHM*, 1945, *18*: 396-397. The work is printed in *Articella* (1515), fols. lxir-lxviir

[37] For this work see TK and Kibre, *BHM*, 1945, *18* 393-394.

[38] The six non naturals were most commonly listed as *aer, cibus et potus, somnus et vigilia, motus et quies, evacuatio et repletio, passiones animae*, although variants in the list occur For discussion of the origins of both term and concept, see L. J Rather, "The 'Six Things Non-Natural': A Note on the origins and fate of a doctrine and a phrase," *Clio Medica*, 1968, *3*. 337-347; S. Jarcho," "Galen's Six Non-Naturals': A bibliographic note and translation," *BHM*, 1970, *44*. 372-377; and P. H. Niebyl, "The Non-Naturals," *BHM*, 1971, *45*. 486-492.

[39] This is probably the tract on wounds of the head See E. T. Withington, tr , *Hippocrates*, III (Loeb Classical Library, 1959), 2-51

[40] For the allusion to this work by Galen contained in his commentary on the aphorism beginning "Quibuscunque (sic) gibbi," see *Articella* (1487), fol. 40r.

[41] Commenting on the aphorism beginning "Quicunque empici," Galen stated: "Hypocras consuevit vocare empicos habentes sanie (sanguinem?) in spacio inter pectus et pulmonem Quomodo incendi debebant monstravit in libro cuius initium est· Si vene pulmonis· quem alii intitulaverunt de empicis" (*Articella*, 1487, fol. 38v). No medieval Latin version of a Hippocratic work with this title or incipit has so far been identified

[42] See Kibre, *BHM*, 1945, *18*. 407, note 228

[43] For the very numerous manuscripts of this work, see the index of TK

[44] The gynecological section of the *Aphorisms* occupies fols 33r-35v in *Articella* (1487) For other tracts on women's diseases, see Kibre, *BHM*, 1945, *18* 395.

[45] Presumably the section numbered 45 in the part of the aphorisms just alluded to, which occurs at fol 34r in *Articella* (1487).

From the foregoing statements is apparent first under what part of philosophy this book should be placed. Furthermore, the whole of medicine, and hence this book is a subdivision of and subalternate to natural philosophy, as Averroes remarks in the first book of the *Colliget* in the place already cited,[53] and as Avicenna says in the first *fen* of the first book of the *Canon* in the chapter on the subjects of medicine.[54] Moreover, this follows from the preceding statements, since a science of any kind is not organized in terms of what is posterior to it, but rather in terms of what is prior to it, if it has these in the other branch of the order of which it is a subdivision. Since, however, we have written very extensively of the way in which medicine constitutes a branch of natural philosophy in our *Questio de subalternatione medicine,*[55] it is surprising that Jacobus[56] said that this follows from the title.

Secondly is made clear the relationship of this work to the other books of

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[46] Hippocrates, *Liber pronosticorum* is printed at fols. 47-75r of the *Articella* (1487). See also TK 1002, etc., and Kibre, *BHM,* 1945, *18.* 387-389, and for other incunabula editions, Klebs 116.2, etc.

[47] The *De secretis pronosticis* is probably one of the several recensions of the work dealing with signs of life or death that were current under variant titles such as *Pronostica* or *Epistola pronostica, Secreta,* or *Capsula eburnea.* See Kibre, *BHM,* 1945), *18:* 390-393.

[48] For the *Epistola ad Antiochum regem* on general rules of health, see *ibid.,* 404.

[49] See note 14 above Hippocrates, *Liber regiminis acutorum,* is printed at fols. 75v-119v of the *Articella* (1487).

[50] This work has not so far been identified.

[51] For Hippocratic works on diet and on the relation of foods to therapy, see Kibre, *BHM,* 1945, *18:* 405-407; also Tk 178, 182, 868.

[52] For manuscripts of this tract and its incunabula editions, see TK 385; and Kibre, *BHM,* 1945, *18:* 410-414. The Hippocratic *De farmaciis* is printed in *Articella* (1515), fols. lxxxvr-v.

[53] "Et dicamus quod aliquid huius artis est speculativum: et illud est eius scientia naturalis" (*Colliget,* 1496, fol. 45v).

[54] "In scientia nam naturali debet [medicina] loqui" [Avicenna, *Canon*] [Venice, 1486; Klebs 131.9] sig. a [vv]. For other incunabula editions and manuscripts see Klebs 131.1-8, 10-14; and TK.

[55] No manuscript of this work has so far been traced.

[56] Jacopo da Forlì, see note 7 above.

Hippocrates. It is indeed that of the principle of a thing to the thing itself, as Averroes similarly notes about the book of the *Physics* in comparing it to other works [of Aristotle][57] For just as the root is related to the trunk, so other works presuppose the existence of this book, in the sense that various sayings are rooted in it. It is however permissible to consider the *Physics* differently since it does not have the same relationship to the other books of natural philosophy that this book has to other medical books. The *Aphorisms* does not, in general, include the same type of information about medicine as the *Physics* does about naural science. But in what ways those two are similar may be verified, as far as the *Physics* is concerned, as I have explained in my edition of Averroes' prologue to the *Physics*.[58]

The third point makes apparent in what manner and in what order this book is related to the *Tegni*[59] and to the beginning of the *Canon*.[60] For its teaching is not in any way posterior to theirs, not even because, as Jacobus asserts, things are here treated briefly which elsewhere are accorded more prolix discussion. For [if length and detail guaranteed priority], then the book of the *Tegni* would be posterior to the first book of the *Canon*, since only generalities concerning the art of medicine are contained in the former, whereas in the *Canon*, of course, particulars are considered. But in the pure order of teaching, general principles come before particulars. Whence it appears, fourthly, that the difference between this book and the others relates to the subject. Because, although it is true that the subject both of the *Aphorisms*, on the one hand, and of the others, the *Tegni* and the *Canon*, on the other, is the regimen of the human body, yet the former deals with the subject on the basis of general diseases, while the latter considers both general and specific diseases, as has been said. Therefore, if one asserts that the subject of this book and of the whole of the science is one and the same, such a statement is acceptable only when it is taken into consideration that there may be many more diseases in the science as a whole than have been considered in this brief treatment.

Fifth to be considered is the method of teaching (*via doctrine*). The method of learning the whole of this science is not an ordinary one, as is broadly explained [fol. 71r] in the first book of the *Tegni* and, above all, in my *Questio*

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[57] Averroes, *Physics*, (*ca*. 1474) fol. [1v].

[58] No manuscript of this work of Matheolus has been located.

[59] The *Liber Tegni* of Galen is printed at fols 151 [155] r-210r of the *Articella* of 1487. For other printings and manuscripts of this extremely widely used work see the index of TK.

[60] Book I of the *Canon* of Avicenna opens with a general account of the nature of medical science, of medical theory and of human physiology, and then proceeds to the discussion of particular diseases, their causes, symptoms and cure.

de doctrinis,[61] in which this is set forth. For the teaching of Hippocrates does not utilize one single method: sometimes he uses demonstration and at other times proof "on account of which"; that is, sometimes he teaches by example, and sometimes by syllogism. The reason for this could be that he was, as it were, the first founder of medicine. For the founder cannot hand things down in order, since it is not possible that the same person both begin and end, according to the close of Book II of the *Liber virtutum naturalium.*[62]

Sixth and last is the division of the book. This book is divided into two parts, namely preface and treatise. Indeed, every work ought to be preceded by a preface in which the mind of the author regarding the succeeding matter has generally to be made plain. Thus, according to the testimony of Aristotle in Book III of the *Rhetoric,*[63] this is the place for learning what the author of the composition has in mind. This division, moreover, into preface and treatise is also remarked on by Galen in the first part of his commentary on the treatise; therefore he begins [at the words] *in perturbationibus.*[64] Hippocrates in his prologue sets forth two propositions. One pertains to the acquiring of medical doctrine, and hence to theory, and the other pertains to medical care, and hence to practice. The first proposition contains two meanings, one explicit, that is "man's life is short; the art of medicine, by comparison, long." The second is purely implicit, namely that it is necessary to compose books in medicine that are aphoristic and brief; also that the physician should be solicitous in active practice. This explanation in large part is drawn from the commentary. Thus Galen postulates in his commentary that Hippocrates goes beyond the explicit meaning and implies something other than that which is implicit in his words. Therefore the first meaning that can be deduced from Hippocrates relates to that art or science: Man's life is short for acquisition of the art, man's time is fleeting because of the mobility of the subject on which we work and also because of its instruments. But for acquiring medicine the time is fleeting and the requisite necessary instruments, namely experience and judgement or reason, are badly disposed. Moreover the necessities requisite for acquisition of the art are badly disposed either because on the one hand they are treacherous *(timorosum)* or on the other difficult. Therefore man's life is short and the art of medicine long by comparison, as is almost self-evident in the expression *Cum maiori tamquam.*[65] For man's life is always short in relation to any art for the acquisition of which man's time is limited, and the instruments necessary for its acquisition are badly disposed. For an art is long, literally, when there is insufficient time for its acquisition and the instruments it has are inept. This is set forth in the text, which has three parts. The first part is that time is fleeting, restricted and short, that is, particularly, the time in which the human body can be treated and medicine must be learned. The second part is that experience is precarious. This is, as will be seen, due to the subject's nobility *(sic)* and its general difficulty, insofar as the time available for acquiring the art of medicine is limited and the requisite instruments, namely experience and judgement, or reason, are necessarily badly arranged. [fol. 71v] The third part is that judgement is difficult whether before or after the fact, since wise men are found to differ about it and, in general, it shares the ineptitude of the experimentor [empirical practitioner].

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[61] No manuscript of this work has been located

[62] For Galen, *Liber virtutum naturalium,* see TK 1231, 1302; printed in his *Opera,* 1490 (Klebs 432.1), 1515, etc

[63] Aristotle, *Rhetoric,* III, xiii-3-xiv. 1. See Aristotle, *The "Art" of Rhetoric,* ed. and tr. J. H. Freese (Loeb Classical Library, 1967), p. 427.

[64] Having concluded his general introduction to the *Aphorisms,* Galen moved on to discuss specific questions, beginning with his commentary on this portion of the Hippocratic text. See *Articella* (1487), fol 9v.

The second meaning, that is the implicit one, that Hippocrates intended to convey can be deduced to be as follows: "Since every man's life is short and the art that is to be acquired long, and especially so as regards practice, it is desirable to compose books that are aphoristic and short, and to be solicitous in active practice." But that man's life is short and the art, that is, of medicine, long, that it is therefore desirable to compose books on medicine that are brief and aphoristic and also to be solicitous in active practice are statements which, together with yet other precepts drawn from the preceding views that are expressed by Averroes in the first part of the *Colliget,*[66] are taken from the commentary. As for this second meaning, it will be evident from the rest of Hippocrates' work that since the art of medicine is long in itself, we cannot retain its lengthy medical subject matter without these aphoristic books. Neither can a man properly acquire without them a perfect knowledge of medicine even to the limited extent that it is ever possible. For this reason, therefore, Hippocrates perceived the necessity for writing this book.

Again, since the art is long, it is impossible to have command of it without lengthy exercises and careful practice of the art. For as is also apparent from the text of the commentary, the means necessary for the understanding of the art are two in number. The first, which relates to the final or general, and experience or practice which pertains to particulars. It was for the general therefore that Hippocrates intended to speak and that these and other brief works are composed and that continuous and careful attention is given to useful practice. Hence because man's life is short, and the art of medicine long, and since the time allotted him is limited, experience treacherous, and reasoning difficult, the moderns offer a useful and broad agreement which I very greatly applaud. All, it appears, agree that Hippocrates' views were accepted as authoritative by other writers, as we have said in the preface of our annual address.[67] The complete utility [of the book] is indeed demonstrated by the extent to which it constitutes a reproof to those who say, as we have said, that in regard to ampleness [*amplicitio*] the breadth and extent of this aphoristic teaching shows to small advantage. However, these three things can always be drawn simply from the commentaries on this book, as will appear in the appropriate place. Hence there is agreement with this in the first book of the *Colliget* and at the close of the fourth book of the *Almansor*.[68] The utility appears to be amplified for all great and difficult arts.

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[65] The source of this phrase has not been identified.

[66] The nature and respective roles of the study of medical theory and actual medical practice are discussed in Book I, Chapter I of the *Colliget* (fols. 45r-46r in the Venice edition of 1496).

Hippocrates therefore says that life, that is man's life, is short, and that art, that is the art of medicine, long. It appears that time is fleeting, experience indeed deceptive or treacherous, judgement difficult.

The second proposition is therefore called for; and it is by this that one is to be induced to undertake the work and to be led to the necessary end of the art. And this proposition is as follows. Correct treatment and prognosis and good practice in general require four concurrent conditions which Galen in Book I [fol. 72r] of the *Liber creticorum* calls modes.[69] The first condition is that the physician take suitable and appropriate measures to aid the patient; the second is that the patient also take suitable measures himself; the third is that the attendants be suited to their work; the fourth that external conditions be continuously well disposed. This proposition is obviously true, because in active practice it is necessary that these [conditions] co-exist; since without them nature is impeded in its motions and the physician in his treatments. But if these conditions are ignored and one is ignorant of the necessity for them, both nature and the physician are impeded. Therefore it is necessary for all these conditions to be present together, to the letter of our custom in natural philosophy and medicine. Moreover, Hippocrates' clear statement of these good things seems also [to assist in] the understanding of nature. Hippocrates therefore says that whether or not the physician [can] deal with the things mentioned above, he ought to do so as far as he can, that is as far as the patient and the disease are concerned, as far as it can be done at the time. And those present ought to be in agreement regarding those things which are extrinsic. The same thing is maintained in Book I of the *Liber creticorum,* Chapter 11.[70] The great utility of this proposition is in active practice, that is as regards cure and prognostication, and this can generally be extended to every practical art, for in its own way this proposition is practical, just as the preceding one was theoretical.

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[67] The reference is probably to one of a series of annual orations delivered by Matheolus at Padua over a number of years. Manuscripts of these addresses were carefully preserved by Matheolus' student Hartman Schedel, and are to be found in the same codex as the present work, which they precede.

[68] Chapter 32 of the fourth *tractatus* of the popular *Liber Almansoris* of the Moslem physician Rhazes (d. *ca.* 923) deals with the relative roles of study and practical apprenticeship in medical education. See *Liber Rasis ad Almansorem* . . (Venice, 1500; Klebs 826.3, bound with Serapion, *Breviarum medicinae*, etc.), fol 21v

[69] For manuscripts and editions of Galen, *Liber creticorum*, or *De diebus decretoriis*, see *TK* 487, 490, 1511; printed in his *Opera*, 1490, 1515, etc. The passage alluded to is probably the section of Book I. Chapter 11, in which the external conditions which can affect the physician's capacity to predict the course of a disease are discussed (Galen, *Opera omnia*, ed. G. G. Kühn, [Leipzig, 1825], IX, 823-825)

"*Plurimi interpretes.*"[71] Galen is everywhere Hippocrates' faithful interpreter. In his commentary on this book he expounds Hippocrates' words and explains them in such a way both in this and in his other commentaries on the same author, that he alone seems to suffice for an understanding of Hippocrates' statements. For while many assertions of the moderns seem to be at odds with one another and incomprehensible, the words of Galen, when they are well and carefully understood, will continue to shed light on this book. The present commentary has two principal parts into which it is divided. In the first of these he sets forth the aphorism as far as it pertains to each of the propositions and as far as the first, that is the explicit, meaning is concerned. In the second he does indeed depart verbally by dismissing the second statement of Hippocrates about this aphorism at the phrase. *Sed his ad horam preter,* etc.[72] The first principle, moreover, has two parts. In the first of these he discusses the first proposition, and in the second the second there following, and this is the division made by Galen as in the passage in which he first refers to "the first part." Many of those who have expounded this work agree that the whole of this part of the book is, as it were, a preface to the rest of the work, and that this is true whether it consists of one aphorism or two. For some say that it constitutes a single aphorism, while others divide it into two. On this point, indeed, we can easily discern from his own carefully considered words Hippocrates' meaning on which he expressed himself in these particular words. And thus Galen believed that not only Hippocrates' statement, but also what was explicit and implicit in it should be considered.

[70] *Ibid*, p. 830.

[71] These are the opening words of Galen's commentary on the *Aphorisms* of Hippocrates (see *Articella*, 1487, fol 9r).

[72] *Articella* (1487), fol. 9r

For he says in the first place that it is, as it were, both a preface and not a preface. The letter of Burgundio says it can be termed an abbreviated preface.[73] This definition may be accepted because the passage under consideration does not fulfil all the general requirements for a preface designated by Aristotle in Book III of the Rhetoric in the chapter "On the Preface."[74] Among the most important of these requirements is that a preface must include [fol. 72v] a summary of the material treated in the work. This indeed Hippocrates does not expressly provide, but he does permit the attentive reader to gather it for himself, as is apparent [in the phrase beginning] "*Vitam.*"[75] Indeed he expounds subtle and ambiguous arguments, as is demonstrated in the commentary.

The end of the preamble on the parts of the *Aphorisms of* of Hippocrates edited by the most distinguished doctor Matheolus of Perugia at Padua in the year 1466, 20th day of April.

[The lecture then continues:]

Let it be noted that although anyone can without experience acquire a knowledge of the whole science of medicine in both its theoretical and practical branches, as appears in Avicenna in the first *fen* of Book I of the *Canon,*[76] yet without habitual experience no one can successfully arrive at that goal. From this it follows that whoever would be a good physician and would practice medicine properly and without error should from the beginning without fail associate himself with good and trained physicians, so that he may see correct practice. For experience shows that he who begins practice without doing this very often errs in the fundamentals, just as there are many who want to be masters before they have been pupils.

Note concerning the discovery and acquisition of medicine

Note that it is said to be possible for us to acquire a knowledge of medicine, like any other science, in general in two ways, namely either through formal teaching or empirical discovery. But empirics gain knowledge of medicine by their own discovery, with much assistance, as is demonstrated in the *Liber heresum,*[77] namely from revelation, fortune or the like. Revelation can be understood in two ways: [one is that it comes] by the invocation of demons, which Aristotle in certain of his problems translated by the Conciliator held to be its source, for he says there, "Clear understanding of natural things is more an attribute of demons than of human infirmity."[78] Avicenna [however, attributed it] partly to exceptional intellectual endowment and partly to the experience of a long life. Whence the word "demonas" in Greek means something like "dogma" or "skill" in Latin. Indeed, revelation of a true kind occurs in a dream as, for example, is apparent concerning spleen in [Book I, *fen*] 2 of the *Canon* in the section on urines.[79] For additions to medical knowledge are acquired by chance or discovery, as is shown in the third *fen* of Book IV of the *Canon,* in the section on leprosy [where it says]: "Many have been cured of leprosy," etc.[80] The same or similar examples can also be read about Hippocrates who discovered the use of the enema while treating a case of poisoning, [when he inserted] a syringe full of sea water into the anus of a poisoned patient. Similarly, too, Dioscorides[81] learned that herbs were good for the eyes from dim-eyed serpents. In the beginning of spring, while they showed themselves to be blind, they rubbed through the leaves of the pepper plant. When this was done their vision was restored to them.

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[73] The particular letter alluded to has not been identified. For Burgundio of Piso's translation of the *Aphorisms* from the Greek, see Kibre, *BHM,* 1945, *18:* 382, and note 66.

[74] Aristotle, *The "Art" of Rhetoric,* III, xiii 3-xiv 1

[75] *Articella* (1487), fol. 94.

[76] "Cumque duarum divisionum (i.e., theory and practice) qualitatem sciveris iam scientiam scientialem et scientiam operativam adeptus eris et si nunquam operatus fueris" (Avicenna, *Canon* [1486], sig. a [vr]).

[77] For manuscripts and texts of this Galenic work, which is probably the same as the *Liber de heresibus,* see TK 611, 1276 and 1605.

If medicine is considered to have originated in this way, our life is indeed short. If however medicine is considered as it is acquired through formal teaching, this also can be understood in two ways, that is either with the refined understanding of the sciences that is necessary for complete mastery, or without such understanding. If the former, then for few men is life long enough. Yet this statement is not to be understood as referring to the whole work of medicine, because as far as that is concerned it is obvious that life can be long enough for no one. For knowledge of all liberal studies or disciplines is a pre-requisite for medicine, as Isidore says in the last chapter of Book I of the

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[78] The Conciliator is Peter of Abano (d ca 1316), who wrote a lengthy commentary on the supposed *Problems* of Aristotle, printed Mantua, 1475, [Venice] 1482 (Klebs 776 1-2). Particula 30 of this work consists of problems pertaining to *prudentia, intellectus,* and *sapientia,* where, however, the passage quoted has not been identified in either text or commentary. The text of the *problemata* to which Peter attached his commentary is in the translation of Bartholemew of Messina, but, according to his own testimony he also translated certain Aristotelian problems himelf; perhaps it is among the latter that the passage in question is to be found See B Lawn, *The Salernitan Questions. An Introduction to the History of Medieval and Renaissance Problem Literature* (Oxford: Clarendon Press, 1963), p 92, and L. Thorndike, "Peter of Abano and another commentary on the problems of Aristotle," *BHM,* 1955, *29.* 517.

[79] Avicenna, *Canon* (1486), sig. f [viiv] - giiv, contains an extended discussion of urines in twelve chapters. The reference appears to be to sig f [viiiv], where there is an allusion to the effect of fevers on the spleen.

[80] *Ibid.,* Book IV fen 3, tractatus 3, sig. ff [viv] - ggr, contains four chapters on leprosy, the second of which is entitled *De cura.*

[81] For the numerous medieval Latin manuscripts of works on *materia medica* attributed to Dioscorides, see the index of TK

Etymologies: "Many people inquire why medicine is not numbered among the liberal disciplines; the reason is that this science prides itself on being the investigator of the causes of everything."[82] And he enumerates one by one all those [fol. 73r] branches of knowledge which he says are necessary to medicine. Whence, at the end of the chapter he calls it a second philosophy.

If indeed it is considered in the second way and compared to the time required for its complete acquisition insofar as it leads to practice, then too it is exactly as said above: Life is short. Because skill in medicine acquired from teaching is to be considered in two ways. One way is that it is acquired from established rules and from similar or practical science to the extent indicated by A [vicenna] in the first [*fen*] of the first [Book of the *Canon*][83] and thus for that type of mastery life is long enough, as indeed certain of the things said above demonstrate. For in a single day anyone can learn from books as much as it took the ancients many centuries to find out, as is remarked in Book IV of the *Almansor,* where the extent to which a physician can perfect himself and become adept in practice is briefly considered, and it is concluded finally that the skill acquired from teaching is acquired as experimental skill and thus is short.[84] Note that Hippocrates in the passage cited above said "Man's life is short, the art long," in order to give the reader to understand that the physician should be solicitous in active practice, so that he may have, as far as anyone can, the experimental skills through which one is readily disposed for practice. And from this perhaps arises the common saying that no-one but an old man ought to be called a perfect physician. Galen is, however, silent regarding this, perhaps because it did not occur to him. For we cannot all know everything, since even good Homer nods.

On Experience

Note: As Galen says in his commentary to anyone who wishes to bring any art to performance, such a person takes upon himself whatever is most conducive to the acquisition of the art in question.[85] The art of medicine as it is acquired through formal teaching requires two instruments, namely reason and experience. Reason is indeed of great use in assigning the ultimate causes of phenomena. Experience, however, meanwhile firmly lays out the dispositions of the body as they are described in the texts studied. Wherefore, in the same way Galen in the *Theriac*[86] compares the physician lacking reason on the one hand or experience on the other to a man wishing to travel but having only one shoe. Just as, therefore, someone who sets out in this condition is incompletely equipped for his journey, so the physician exercising his craft through only one of the two means will have only an incomplete grasp of the art of medicine. I have indeed said this as regards learning through formal teaching, because for the data that are acquired in medicine by discovery a very great deal of experience is required; and this takes much longer than the acquisition from formal teaching. Yet in the acquisition through teaching, too, first hand information is required. For the experience of the ancients gave them strength, since, although reason forms the mind through teaching, yet unless reason is continually corrected by experience it does not lead the physician to practice properly. And these matters do not seem to be discussed in the writings of Iacobus, Marsilius and Ugo[87] in the part expounded.

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[82] The reference is actually to Isidore of Seville, *Etymol.*, IV, 13, 1-5, "The study of medicine."

[83] Avicenna, *Canon* (1486), sig a[vr-v]

[84] See note 68 above.

[85] *Articella* (1487), fol. 9r.

[fol. 69] Vita brevis. Expositurus deo duce Afforismos Hippocratis aliqua pro operis introductione prelibabo que ex sentenciis Averrois primo physicorum et Aliabatis primo theorice assumentur. Sex igitur premittemus. Primum quis libri titulus. Secundum que autoris intencio. Tercium que utilitas. Quartum qualis ordo. Quintum que via doctrine. Sextum et ultimum divisio.

Titulus[1] libri hic est. *Incipit liber afforismorum quem Hippocrates Chous de medicina edidit*. Dicitur autem afforismus ab afforico quod idem est quod seperare ut Mesue in De appropriatis dixit. Dixit quod Hypocrates in libro separatorum sermonum, dicens intelligere hunc librum. Dicitur etiam aforismus aliter ut colligi potest a Galeno in commento prologi quia scilicet est sermo brevis plenus multa sentencia quod sensit Isidorus octavo Ethimologorum c. 3 dum dixit Afforismus est sermo brevis rei proposite sentenciam comprehendens. Comprehendit enim doctrina afforistica sub paucis verbis multam sententiam. Ideo Galenus primo elementorum in brevitate sermonis antiquorum locus admirationis existit. Trahitur autem ex commento primo huius libri hec diffinitio dum dixit cum aforismum brevitate sit explere cuiuslibet sententiam. Hoc idem sensit in commento quarti Regiminis acutorum. Ex hoc titulo patet quod sit auctoris nomen, et tandem hic huius causa efficiens est commenti. Hippocrates de Choo insula filius Eraclidis ut notat Galenus primo Regiminis acutorum ibi ptisana. Licet aliquando reperiatur Euclidis: que littera ut refert Marsilius prima est. Fuerunt tamen multi Hippocrates in Ameria enim urbe que in agro romano est, fuit inventa urna una que aduc extat in honore Hippocratis facta cui hoc erat inditum epitaphium: Hippocrates. Curidis L. Meocratis Hippocratis soror. Certum est

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[86] For Galen, *Theriac (Tyriaco et metridato* or *Tyriaca ad Pamphilium)* see TK 855; and 28, 1224, 1700, respectively.

[87] For these earlier contemporaries of Matheolus who also commented on the *Aphorisms*, see note 7 above.

[1] *Titulus* repeated in the left margin. Such headings in the margin occur throughout but will not be further indicated.

hunc epitaphum non potuisse esse Hippocratem Choum. Quod autem dixit Ysidorus quod Hippocrates natus fuit ex Esculapio patre puto quod figurative dictum fuerit quia medicinam post Esculapii mortem multo latentem tempore revocavit in lucem. Hic quidem est summa extollendus laude omni iudicio et maxime Galieni variis in locis. Hic quidem medicinam queque quingentos annos post Esculapii mortem latuerat in lucem ut diximus revocavit testis est Isidorus. Claruit autem Democriti temporibus primo suo tempore plerique viri doc [fol. 69v] tissimi extiterunt. Falso autem dicitur ab aliquibus Democriti eum fuisse discipulum ut apte patet in *Epistola* sua ad Democritum habita. Patet etiam in his que refert ipse de Abderitis qui vocarunt eum ut Democritum ab eis creditum insanum liberaret.

Secundum est auctoris intencio. Intencio autem Hippocratis hic est velle explanare sanabilia medicine breviter sub paucis verbis multa comprehendens sententiam. Ex quo apparet quod et quale sit aut esse debeat huius libri subiectum et etiam medicine tocius. Subiectus enim licet capiare apud philosophos et logicos multis modis pronunc tamen capitur pro aliquo commenti in scientia principaliter considerato. Sic quia principale intencio scientie sit circa illam sicut universaliter artificis intentio est circa materias que operi eius subicitur. De quo subiecto et partibus eius probantur in scientia. Passiones et omnia alia in illa scientia considerata habent. Ad illud tale reductionem et non excedit illius scientie capacitatem qualiter dicimus corpus mobile subiectum naturalis philosophie et arismetrice numerationem et geometrie magnitudinem. Sic ergo capiendo subiectum dicimus quod hic libri subiectum, est corpus humanum vivificabile sanabile secundum passiones communes et proprias consideratum. Ponuntur enim canones in hoc libro non solum generales sed etiam speciales diversas egritudinum species concernentes. Quare autem dixi assignando subiectum egrotabile et sub neutra dispositione ponibile et a medico operabile sicut communiter ponitur. Que habet videri in Questione mea de subiecto medicine. Et sic tandem patet huius scientie materialis causa. Non enim habet scientiam materiam unde ab aliis distingui possit nisi circa quam que est subiectum, licet aliquando partes eius integrales pro eius materia assignentur.

Tertium est utilitas. Hec quidem ut intenti patet satis explanare in textu cum enim Vita hominis sit brevis et ars medicine longa fuit necessarium nedum utile componere huius doctrinam afforisticam. Quare dicit Galienus de(?) in commento de hac scientia loquens, magnum per hoc iuvamentum tribuitur, longam artem brevi tempore discere volentibus et in alia trans(?) ad ipsam enim primam discretiam de(?) ad memoriam eorum que quis didicit et ad reminiscentiam eorum quorum quis postea oblitus est. Hic modus doctrine actus est. Ex quo patet quod Nicolas et alii qui magna volumina in medicina scripserunt non multum utiles sunt maxime medico volenti non solum intelligere medicinalia sed operari. Prius enim morietur eger quam integre in eo materia sue egritudinis complete legi possit.

Quartum qualis ordo. Est [fol. 70r] autem hic liber primus in ordine librorum quos Hippocrates composuit de medicina tractantes. Continet etiam genera sanabilia medicine alii autem particulariter. Modo ultime ordine doctrine particularia antecedit ut notat Averroes primo physicorum et etiam in prologo eiusdem. Et Galienus in commento illius tertie parte constitutiones anni. Libri autem quos composuit Hipp. sunt varii. Primo sit ad medicinam introductorius scilicet libellus de lege docens condiciones quas debent habere medicinam audituri. Hic autem est ille cuius meminitur Galienus commento primo. Alii quidem sunt diversi varias tangentes medicinales materias, sicut ad artificialem notitiam practicam ut practica est pertinet ut notat Averroes primo Colliget parum ultra prohemium. Tria etiam inquit sunt, que debet artifex practicus considerare, scilicet subiectum finis et instrumenta per que finis acquiritur. De membris ergo quedam est consideratio generalis de qua est afforismorum liber. Specialis autem consideratio continet subiectum medicine scilicet corpus humanum et membra eius pro quo fecit librum de Anothomia ut dicit Galenus sententia huius ibi: fetus mares. Et quia corpus humanum habet materiam tam propinquam quam remotam, ideo fecit librum de humoribus de quo Galenus commento primo huius. Etiam de elementis quod vocavit de natura humana, cum meminit Galenus libro de elementis. Fecit itiam librum de generatione corporis humani de quo loquitur Galenus libro de spermate.

Secundo tractavit de fine huius qui est sanitas non formaliter sed ex consequenti determinando scilicet de morbis et dispositionibus neutris corporis humani. Dixit enim de morbis contingentibus communi impressione aeris et hoc in libro epidemiarum. Item de hiis morbis qui occurrunt ex impressione sex rerum non naturalium pro magna parte pro quo fecit librum de aere et aqua et regionibus. Et hi morbi dicti sunt undimiales. Item librum de vulneribus ut sexto afforismorum ibi: quicumque gibbi. Galenus scilicet in commento. Item de cura empiantis in eodem libro commento. Item de fractura cranei ut Galenus de ingenio sanitatis. Item de passionibus mulierum 5ta afforismorum. Commento 45 scilicet illius quicumque corpus moderate, de signis etiam determinaverit et maxima pronosticis quorum maxima est utilitas. Pro quo fecit librum pronosticorum et de secretis pronosticis, ad Antiochum regem de conservatione sanitatis epistolam primam. De [fol. 70v] cura fecit librum de regimine acutorum. De instrumento autem quo removetur egritudo et inducitur sanitas librum fecit de caldo et frigido item de cibo et etiam librum de farmaciis. Sunt ergo Hippocratis libri numero xix. Patet ergo principale propositum scilicet quod afforismorum liber ordine doctrine inter istos est primus excepto libello de lege.

Ex hiis patet primo cui parti philosophie supponitur hic liber. Supponitur etiam et subalternatur tota medicina et tandem hic liber naturali philosophie ut notat Averrois primo Colliget loco allegato, et Avicenna prima primi capitulo de subiectis medicine. Sequitur autem hoc ex dictis quia scientia alicuius non tamen habet ordinem ad posteriora sed etiam ad priora si habet illa in alterato cuius ordinis nascitur subalternatio. Quoniam autem subalternetur medicinam philosophie naturali latissime scripsimus in Q. meam de subalternatione medicine, unde mirandum est de Iacobo qui dixit hoc sequi ex titulo.

Patet 2° qualis sit proportio huius habet ad alios libros Hipp. Est enim principium rei ad rem ut simile notat Averroes de libro phisici comparando eum ad alios. Et etiam sicut radicis ad truncum hunc enim librum presupponunt alii sicut mixta dicta et in eo radicantur. Licet subtit intuendo aliter liber phisici se habet ad alios naturales quam hic liber ad suos medicinales. Cum non ita generaliter contineat medicinalia sicut ille naturalia. Quod autem de libro phisicorum verificantur ille due similitudines explanavi in editione nostra quam feci super prologo Averrois in libro phisice.

Tertio patet qualiter et quo ordine se habet hic liber ad librum Tegni et primo canonis. Est enim doctrina aliquo modo posterior non quidem ut inquit Ia. quia contineantur hic breviter que prolixius alibi pertractantur. Quia tunc liber Tegni esset posterior primo canonis sed quia ibi continentur more generalia artis medicine. Hic vero pro magna parte specialia utque intuenti, generalia autem pura ordine doctrine priora sunt specialibus. Unde patet quarto differentia inter hunc librum et illorum quo ad subiectum quia licet subiectum huius et illorum sit corpus humanum rectem ibi tamen est subiectum secundum passiones communes hic vero secundum communes et speciales ut dictum est. Quod si dicas ergo idem est subiectum huius libri et tocius sciencie, dicitur concedito licet secundum plures passiones sit apud totam scientiam quam hic contractam consideratum.

Quintum est via doctrine. Modus quidem sciendi totius huius scientie non fuit ordinarius ut late explanatur [fol. 71r] primo Tegni et ultra alios in questione nostra de doctrinis in qua hec latificata est. Quare Hippo. non una est usus doctrina aliquando enim usus est demonstratione quia aliquando propter quid aliquando doctrina exemplari aliquando entimematica. Potuit autem esse causa quia ipse fuit quasi primus medicine inventor. Inventor autem non potest alia tradere ordinate, non enim est possibile eumdem incipere et finere, 2° virtutum naturalium ad finem.

Sextum et ultimum est divisio. Dividitur autem iste liber in partes duas, scilicet prohemium et tractatum. Debet enim unicuique operi prohemium anteponi in quo mens autoris super futuro processu generaliter habet explanari. Oportet enim testante Aristotele Rethorum 3° locum sciendi in anima situra orationem. Hanc autem divisionem in prohemio et tractatu asserit G. in prima parte commenti tractatus; ergo incipit ibi "In perturbationibus." In prologo Hippo. duo ponit documenta. Unum qua ad doctrinam medicine capescendam et ad theoricam et aliud quo ad opus et pertinens practicam ibi oportet. Primum autem documentum duas continet sentencias unam explicitam s. vita hominis est brevis. artis medicine longe comparatione. Secundam implicitam pura. Oportet componere in medicina libros et illos afforisticos vel breves ac etiam oportet medicum in actu practico esse solicitum. Hoc enim pro magna parte trahitur ex commento. Ponit enim G. in commento Hippocratem ultra illud explicitum et aliud intendere quod implicite in verbis eius Hippocratis includitur. Prima ergo sententia ab Hippocrate deducitur sit respectu illius artis vel scientie: Vita hominis est brevis ad quam acquirendam temporalis hominis est acutum propter subiectum in quodam operamur mobilitatis et etiam eius instrumenta. Ad ipsius acquisitionem necessaria requisita sunt male disposita[2] sed ad acquirendam medicinam tempus est acutum et ei instrumenta necessaria requisita scilicet experimentum et iudicium vel ratio sunt male disposita. Quia alterum est timorosum et alterum est difficile. Ergo vita hominis brevis est artis medicine longe comparatione, littera cum maiori tamquam quasi per se nota. Semper enim vita hominis est brevis respectu illius artis pro quo acquirenda tempus hominis est acutum et instrumenta pro illius acquisitione necessaria sunt indisposita. Ars enim propter littera longa quando tempus non est sufficiens pro eius acquisitione et instrumenta habet inepta. Ponitur in textu et habet tres partes. Prima pars est quod tempus est acutum et strictum et breve scilicet tempus quo particulariter est operandum etiam corpus humanum ex quo opere est acquirenda medicina. Secunda pars experimentum est timorosum. Et hoc propter subiecti ut patebit nobilitatem et per communis ineptus scilicet secundum ad acquirendam medicinam tempus est acutum et ei instrumenta necessario requisita scilicet experimentum et iudicium vel ratio sunt male disposita. [fol. 71v] Tercia quod iudicium est difficile sive sit precedens sive sequens cum (autem) in eo inveniantur sapientes discordare et per communis etiam ineptum una cum experimentori.

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[2] What follows up to the second *male disposita* is indicated as apparently inadvertently omitted by the scribe, but was added in the lower margin of the manuscript.

Secunda sententia scilicet implicita quam intendit Hippocrates deducitur sic quecumque vita hominis est brevis et ars acquirenda longa et maxime practica oportet componere libros et illos afforisticos ac breves ac etiam in actu practico esse solicitum. Sed vita hominis est brevis et ars longa scilicet medicine ergo oportet in medicina componere libros breves et aforisticos ac etiam in actu practico esse solicitum tamen alia cum mori ex precedenti sentencia Averrois pro prima parte Colliget ex commento. Pro secundo patebit ex processu Hippocratis stante etiam arte medicine de se longa non possumus sine his afforisticus libris. Longa eius materias in medicina retinere neque sine his homo erit sufficiens qualiter (qualum) possibile est ei medicinam perfectam acquirere. Pro hoc ergo capit Hippocrates necessitatem scribendi hunc librum.

Item stante arte longa impossible est illam habere sine longis exercitiis et solicite usu artis. Duo etiam ut patebit et in littera commenti in numeri sunt necessaria artis capescende instrumenta. Primo s. quo ad ultimam et experimentum vel exercitium quo ad particularia. Ultimo ergo Hippo. dicere componendi sunt hi et illi breves et continue et sollicite intendendum est usu practico. Propterea quia vita hominis est brevis et ars medicine longa cum tempus ille attributum sit strictum et experimentum timorosum et ratio difficilia, moderni posuerunt concordiam utilitatem et amplicitiam quod ego maxime laudo. Ex concordia omnium apparet auctorizata esse sententia Hippocratis ab aliis ut in prefactione annua nostra dixerimus. Utilitas autem tota est ut ostendatur quantum hoc opus sit notatum contra illos qui dicunt ut diximus: circa parvum proficuum amplicitio ostendit amplitudinem et latitudinem huius doctrine afforistice. Hec autem tria trahi possunt semper simpliciter in commentis huius libri sicut suo loco patebit. Concordia ergo huius summe habetur primo Colliget et 4°Almansuris ultimo. Utilitas patet amplicitur (ampliatur) ad omnes magnas artes et difficiles. Dicit ergo Hippocrates Vita brevis scilicet hominis et ars scilicet medicine est longa. Patet tempus est acutum experimentum vero fallax vel timorosum iudicium difficile. Oportet autem secundum documentum et est quo ad opus inducendum et debitum artis finem consequendum. et est hoc videlicet de recte operandum et pronosticandum et ultime in omni actu practico bene se habendum oportet quatuor concurrere conditiones quas Galenus primo [fol. 72r] Creticorum vocat modos. Prima condicio est quod medicus faciat oportuna et convenientia egrotanti. Secunda quod egrotans etiam de se faciat oportuna. Tercia quod astantes sint idonei. Quarta quod exteriora sint continua et bene disposita. Patet hoc documentum quia illa oportet in actu practico concurrere sine quibus impeditur natura in suis motibus et medicus in suis operibus. Sed relictis his condictionibus et ignorato aliquo illorum manire impeditur natura et medicus. Ergo oportet illas condiciones concurrere littera ad nostri assuestam in naturali philosophia et medicina. Et bonarum etiam videtur natura intelligenti ergo Hippocratis documentum clarum. Dicit ergo Hippocrates oportet a non suprascripti medicum prehibere quatenus que oportet scilicet egrotanti scilicet egrotum scilicet oportet pro tempore que oportet. Et presentes et ea que extrinsecus sunt, oportet. Etiam concordia habetur primo creticorum capitulo xi: Utilitas est magna in actu practico scilicet curativo et pronostico ampliatur generaliter ad omnem artem practicam suo modo est autem hoc documentum practicum sicut precedens theoricum.

Plurimi interpretes vero Galenus fidus Hippocratis ubique expositor in hoc suo commento verba eius declarat et ita declarat in hoc et in reliquis commentis autoris ut solus ipse videatur sufficere ad intelligentiam dictorum Hippocratis. Quare multa dicta modernorum varia intelligentibus et aliena esse videbuntur quando verba Galeni bene et diligenter fuerint intellecta patebit hoc continue luce clarius. Habet autem penes commentum dua principalia in que dividitur. In quorum primo manifestat afforismum quo ad utrumque documentum et quo ad primam sentenciam scilicet explicitam. In 2° verba digreditur manando secundam Hippocratis sententiam circa hunc afforismum ac sententiam ibi sed his ad horam preter idcirca. Primum autem principale habet duas partes. In prima quarum declinat primum documentum, in secunda secundum ibi subsequens et hec est divisio facta a Galeno utque in littera quo ad primam partem. Dicit primo Multi ex expositoribus in hoc convenerunt quod hoc totum sit quasi prohemium tocius sequentis operis et hoc sive sit unus afforismus sive duo. Aliqui enim dicebant esse unum. Aliqui dividebant in duos. Circa quidem est consideranda Hippocratis sentenciam in considerandis et intellectis Hippocratis propter quam dixit ista verba quod facile poterimus scire ex verbis suis consideratis diligenter. Et sic Galenus vult quod non solum sententiam Hippocratis explicita sed implicita est consideranda. Dixit primo quasi prohemium et non prohemium. Licet littera Burgun. [Burgundionis] dicat prohemium abbreviate. Sequendo tamen istam divisionem quia hoc non habet ultimas omnes condiciones prohemii assignatas ab Aristotele 3 Rethorum capitulo de prohemio. Inter quas maxime numeratur quia debet habere [f. 72v] summatim illa de quibus habenda est mentio in processu quidem hec Hippocrates non servavit expresse licet faciat aucitorem attentum ut patet. Vitam. Exponit vero tenuos ambiguos positiones ut patet in commento.

Finis preambuli super particule afforismorum Ypocratis editi a clarissimo doctore Matheolo Perusino Padue Anno [MCCCC] lxvi die xx Aprilis.

Nota licet aliquis sine experimento posset totalem scientiam medicine habere tam scilicet theoricam quam practicam ut patet prima primi ab Avicenna tamen sine experimento habito non posse ad opus illam convenientem adducere. Ex quo sequitur quod qui debet esse bonus medicus et operare congrue sine errore a principio debet cum bonis et expertis medicis conveniri ut videat opera recta. Unde experimentum eliciat qui vero sine hoc operatur sepissime in principiis erratur sicut sunt multi qui prius volut esse magistri quam discipuli.

Nota quidam de inventione et acquisitione medicine.

Nota medicina in genere dupliciter dicitur posse acquiri a nobis aut scilicet per doctrinam aut per inventionem sicut et quelibet alia disciplina acquisiveruntur. Autem eam empirici per inventionem multis adiutoriis prediti ut patet libro heresum scilicet revelatione fortuna simili vel ex alia. Revelatione dupliciter scilicet vel demonum invocatione ut voluit Aristotelis in quibusdam probleumatibus suis a Conciliatore translatis ubi inquit in est enim demonibus plus quam humane infirmitati rerum naturalium clara cognitio partim subtilissimi sensus. Avicenne partim etiam experientia longe vite. Unde demonas grece quasi dogmas vel peritus Latine. Ideo vero modo revelatio fit somnio videlicet de spleneticio patet 2° canonis capitulo de urinari. Fortuna autem inventa est medicina ut patet 4° 3a canone de lepra sanati sunt plures a lepra etc. exemplo etiam aut simili sicut legitur de Hippocrate qui a aconiis inpositionibus rostrum plenum aqua maris in anum aconie pacientis usum clisteris didicit. Similiter et Dyas. didicit sen [fen] prodesse oculis a serpentibus calligatis oculos. In principio veris dum caecitas exibent perfrondes peucedari fritabant quo facto lumen eis restituebatur. Hoc modo ergo considerata medicina ortu eius acciperende vita nostra est brevis. Si vero consideretur medicina ut est per doctrinam acquisita hoc iterum dupliciter habere contingit, aut scilicet cum exquisita cognitione scientiarum que ad eius completum necessario requiruntur aut sine tali cognitione. Si primomodo et sic paucis hominibus vita est longa. Non tamen referendo medicinam ad opus ut patebit quia sic nullis potest esse longa. Requiruntur enim ad eas omnes liberales doctrine vel discipline propterea dixit Isidorus uni Ethimologorum capitulo ultimo. Queritur a multis quare medicina inter disciplinas liberales non contineatur ratione propterea quia ille scientia gloriaretur speculator causas ista vero omniun. Et numerat singulariter unamquam [f. 73r] que earum quarum cognitiones dicit esse medicine necessarias. Unde in fine capituli vocat eam secundam philosophiam. Si vero secundo modo consideratur et comparetur ad tempus requisitum per illa complete aquirenda et ut ad opus ducitur etiam desuper: Vita est brevis. Dicitur complete quia medicine habita per doctrinam dupliciter consideratur. Uno modo ut est ex canonibus acquirenda et scientia simile vel operative ad modum longitudi Avicenne prima primi et sic ad eam habendam vita est longa quidam vere predictam donec senserunt. In una etiam die quis per libros addiscere potest tantum quantum antiqui per multa secula experti sunt ut habeatur 4° Almansor breviter consideratur pro quanto per eam medicus potest perficere et prompte in opus concluditur et sic ultime habitum acquisitum per doctrinam aquiritur habitus experimentalis et sic est brevis.

Nota videns Hippocrates prescripta dixit Vita hominis est brevis ars longa ut daret intelligere quod oportet medicum esse solicitum in actu practico ad hoc ut quanto cuiuscumque(?) possit habeat habitus experimentales per quos prompte disponitur ad operandum. Ex isto forte habetur causa illius cuius quidem communiter dicitur quod nullus nisi senex perfectus medicus dici debet. Galenus autem tacuit hoc quia fortasse non advertit. Non enim omnia possumus omnes conclusiones namque bonus dormitat Homerus.

De experimento

Nota ut dicit Galenus in commento ad volendum aliquam artem ducere ad effectum et etiam sumit ad acquisitionem quecumque sint maxime. Artis medicine etiam per doctrinam acquisite ii necessario requiruntur instrumenta scilicet ratio et experimentum. Ratio quidem magis circa ultimam in assignando causas effectuum. Experimentum quidem ut firmiter porigat interim dispositiones corporum ex suprascriptis. Et ideo Galienus unde theriace assimulat medicum uno istorum carentem homini volenti itinerare et unum ceus tamen habenti. Sicut igitur sic dispositus incomplete faciet iter suum ita medicus uno solum modo utens instrumento incomplete habebit artem medicine. Dixi autem et per doctrinam, acquisita quia date quod in medicine acquisita per inventionem maxime requiratur experimentum et longe plus quam acquisita per doctrinam. In acquisita tamen per doctrinam necessario etiam requiritur primo notitiam. Experimenta enim antiquorum dederunt robur sicut quam maxime habitus per doctrinam ratio format quia nisi ratio continua per experimentum rectificetur non est acta ut pro parte conducat medicum ad opus. Et he non visi sunt suprascripsisse Iac. Mar. et Ugo in parte s. exposita.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

W. B. McDANIEL, 2d (1897-1975)

Walton Brooks McDaniel, 2d—"McD" to medical historians, librarians, and Fellows of the College of Physicians of Philadelphia, with which he was associated more than 40 years—died on May 23 as a result of injuries received from an automobile. He had retired only in October 1973 at the age of 76.

Born in Winchester, Mass., on August 30, 1897, McDaniel was graduated from Harvard College in 1920, taught English at the University of Pennsylvania (1920-22) and Brown University (1922-23), and classics in private schools (1923-25) and at New York University (1925-33), where he received the doctorate in 1932. His edition of the poems of Catullus was published by Oxford University Press in 1933. In June of that year McDaniel was appointed librarian of the College of Physicians of Philadelphia;

WALTON B. McDANIEL, 2d
1897-1975

after 20 years in that post he became curator of Historical Collections. For 18 years beginning in 1937 he edited the *Transactions & Studies* of the College, and he continued to read proof of the journal after he resigned the editorship in 1955. Inevitably he came to know the College better than anyone; as a result, officers and committees, needing some fact or precedent, might postpone an action until they could "ask McD." On his retirement in 1973 McDaniel was elected an Honorary Associate Fellow of the College. By happy coincidence the president of the College at the time had been in McD's freshman English class at Pennsylvania more than 50 years before.

McDaniel took an active part in medical library and historical activities. He was editor of the *Bulletin of the Medical Library Association* in 1936, president of that Association in 1946, and an honorary consultant to the Armed Forces Medical Library in 1946-52. He played an influential part in establishing the Philadelphia Union Library Catalogue and was president of the Metropolitan Library Council of Philadelphia. As secretary of the American Association of the History of Medicine in 1944-46, McDaniel was one of those who held the organization together during the years of World War II.

McDaniel was author of more than 90 articles on the history of medicine, libraries, medical historiography, and the College of Physicians. One of them, on "The Beginnings of American Medical Historiography" rescued several early historians from oblivion; another, on Francis R. Packard, illustrated the contributions which nonprofessionals may make to knowledge and understanding of the past. In addition, from 1935 to 1938 and from 1956 to 1967, McD wrote scores of bibliographical and historical notes, chiefly on books and manuscripts in the College collections, which he published under the title of *Fugitive Leaves from the Library of the College of Physicians*. In this informal way—*Fugitive Leaves* were mimeographed on cheap paper—McDaniel offered comment on the 1512 Antwerp edition of Ketham's *Fasciculus medicinae*, a checklist of manuscript lecture notes in the College library, transcription and notes on letters of John James Audubon, John Bachman, Charles D. Meigs, John Morgan, and Benjamin Rush, the plague tract of Johannes Mercurius Corrigiensis, an index of the subjects, dedications, and inscriptions of medical theses of American graduates of Edinburgh, a variorum of doggerel verses on Philip Syng Physick, and much other useful information. Lisabeth M. Holloway, McD's successor as curator of the Historical Collections, compiled a list of articles on medical history written or edited by him in "A Salute to W. B. McDaniel, 2d," in the *Transactions & Studies*, XLI (1973-74), 171-75. As this memoir is being written, steps are being taken to reprint the most valuable *Fugitive Leaves* in permanent form.

Fugitive Leaves was a perfect vehicle for McD, and the kind of unobtrusive publication he might have been expected to choose. Careful, witty, and humane; modest to the point of shyness; with a sense of humor that was oblique, mildly self-deprecating, and revealed his familiarity with the Latin classics, McDaniel was a sound scholar who, as librarian, knew, read, and valued books. He used them in scores of small but appropriate exhibits to illustrate programs of the Section on Medical History of the College, where, if a speaker should mention a scarce title or regret he had not seen some rare book, McD would quietly leave the room, return in a few moments and slip the volume unobtrusively into the speaker's hand at the end of the lecture. In all his work he took pains to be accurate, clear, and brief. Advising a young medical editor, McD enjoined him always to do his best because "there are those who know and value excellence."

Some years ago a young Irish woman who had married an American physician and was going to live in Philadelphia, was asked by an older friend, "Are there any *gentlemen* in Philadelphia?" The young bride replied that, as she had never been there, she did not know; but she promised to keep the question in mind. Months later, at some social occasion at the College of Physicians to which her husband brought her, she was introduced to McDaniel. On the way home, reflecting on the evening, she commented on McD's graciousness, learning, and wit, and then said, "I must write – – – in Dublin and answer her question."

Whitfield J. Bell, Jr.

ANNOUNCEMENTS

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE

Committee Chairmen, 1975-76

Editorial Committee, Charles Rosenberg; *Educational Problems Committee,* Chester R. Burns; *Meetings Committee,* Donald G. Bates; *Garrison Lecture Committee,* Paul Cranefield; *Welch Medal Committee,* James H. Cassedy; *Osler Medal Committee,* Peter D. Olch; *Nominating Committee,* Whitfield J. Bell, Jr.; *Program Committee,* Robert P. Hudson; *Local Arrangements Committee,* Chester R. Burns.

Call for Papers—1976 Meeting

The 49th Annual meeting of the Association will take place in Galveston, Texas, May 12-15, 1976. The Program Committee invites proposals for papers to be delivered at the meeting. As in previous years, papers may deal with any aspect of the history of medicine or the biomedical sciences. Papers from non-members will also be considered. *Presentations will be strictly limited to 20 minutes.* Time for discussion will be available after each paper or group of papers at the discretion of the session's presiding officer.

Persons wishing to be considered for the program are asked to submit a 300-400 word abstract to the Chairman of the Program Committee: Dr. Robert P. Hudson, M.D., History and Philosophy of Medicine Department, University of Kansas Medical Center, Rainbow at 39th St., Kansas City, Kansas 66103. The *deadline for submission* of abstracts is *December 1, 1975.* Potential participants are reminded that the *Bulletin of the History of Medicine,* official organ of the Association, reserves the right to consider for publication any paper delivered at the meeting.

Other members of the Program Committee are: Drs. Chester R. Burns (Liaison), George E. Gifford, Jr., Frederic Lawrence Holmes, and Gordon W. Jones.

NATIONAL NEWS

Bicentennial Medical Play

The American Medical Association has produced a play, "Dr. Rush Pays a Housecall," to honor five American physician patriots: Benjamin Rush, Josiah Bartlett, Lyman Hall, and Matthew Thornton, signers of the Declaration of Independence; and Dr. Joseph Warren, who fell at Bunker Hill. The script is available for presentations sponsored by medical societies, medical colleges and other appropriate organizations. Contact Alfred Stern, 408 West 57th St., New York, N.Y. 10019.

Cheiron

The 8th annual meeting of Cheiron, The International Society for the History of the Behavioral and Social Sciences, will be held May 28-30, 1976 at the National Museum of History and Technology, Smithsonian Institution, Washington, D.C. Papers (maximum length 20 minutes) will be considered that deal with aspects of the history of any of the behavioral and social sciences and should be submitted to Dr. Michael S. Sokal, Department of Humanities, Worcester Polytechnic Institute, Worcester, Mass. 01609. The deadline for abstracts is November 15, 1975, for completed papers (2 copies and return postage), December 31, 1975.

Cornell Medical Center

During the past academic year, supported by a grant from the Josiah Macy, Jr. Foundation, a series of seminars devoted to the historical development of the mind-body problem have been held at the Payne-Whitney Psychiatric Clinic These have been named the Allan McLane Hamilton Seminars in honor of the first Professor of Psychiatry at Cornell University Medical College. Participants in the series, each speaking on a different time period, included: Herbert Winer (current), Leon Hankoff (Egyptian-Hebraic), Bennett Simon (Greco-Roman), George Mora (Medieval), Ivor Leclerc (Renaissance), Margaret Wilson (Cartesian and 17th century), Lester S. King (18th century), Otto Marx (19th century) and John C. Burnham (early 20th century).

The annual report of the Oskar Diethelm Historical Library for 1974 has been issued and copies can be obtained from the Department of Psychiatry, Cornell University Medical College, 525 E. 68th St., New York, N.Y. 10021.

Darwin Letters

Dr. Frederick Burkhardt, President Emeritus of the American Council of Learned Societies, and Dr. Sydney Smith of St. Catherine's College, Cambridge, are planning an edition of Darwin's letters that will be as comprehensive as possible, arranged in chronological order with full text and annotations. The project is supported by a joint grant from the National Endowment for the Humanities and the National Science Foundation. The editors will appreciate any help that collectors, scholars, antiquarian booksellers, and others with knowledge of Darwiniana will feel disposed to contribute to this project which will make available for the first time materials basic to future scholarship on Darwin and the history of 19th-century science. Please direct correspondence to Dr. Frederick Burkhardt, R.F.D. 1, Bennington, Vermont 15201, or to Dr. Sydney Smith, St. Catharine's College, Cambridge, England CB2 1RL.

Josiah Macy, Jr. Foundation

The Macy Foundation has announced the awarding of fifteen fellowships in the history of medicine and the biological sciences for 1975-76. Seven new fellows were named—five for predoctoral study and two at the post-doctoral level—and eight fellowships were renewed. Recipients are: Ann Carmichael Mold and Stephen

Wilkerson (Duke); David Ozonoff, Shirley Ann Roe and David Rosner (Harvard); Jane Maienschein (Indiana); Jerome Bylebyl, Pauline Mazumdar and Robert Miciotto (Johns Hopkins); Michael Zlonis (Minnesota); John Patterson, John Pitts and Daniel Todes (Pennsylvania); Nancy Gallagher (U.C.L.A.); Merriley Borell Trench (Yale).

The fellowship program is not being renewed at present. Since 1966 a total of seventy-eight pre- and postdoctoral fellows have been trained in the history of medicine and the biological sciences with the Foundation's support (see this *Bulletin*, 1975, *49*:279-283). At this time, however, the Foundation believes that the humanities in medicine can best be encouraged by assisting medical schools to develop new programs. Future awards will be based primarily on salary assistance for a new faculty member who has been trained in the field, and the terms will depend upon commitments for future support by the medical school.

Oregon

On July 19, 1975, the Clatsop County Medical Society unveiled a monument on the grave of Bethenia Owens-Adair, M.D., in Ocean View Cemetery near Warrenton, Oregon. A member of an Oregon pioneer family, Dr. Owens-Adair was one of a handful of women practicing medicine on the Pacific coast in the late 19th century.

Popular Culture Association

The Association is holding its 1976 convention at the Pick-Congress Hotel, Chicago, April 22-24, 1976. For these sessions the Association, which is an interdisciplinary forum, invites contributions from various disciplines and specialties. Proposals for papers should be sent by October 15, 1975, to Professor Fred E. H. Schroeder, Humanities, University of Minnesota-Duluth, Duluth, Minn. 55810.

University of Texas

The Institute for the Medical Humanities at the University of Texas Medical Branch announces the availability of fellowships in the history and philosophy of mental health for varying periods of time from July 1, 1976, to June 30, 1978. Fellows will be selected according to their demonstrated commitment to serious scholarly endeavor, and remuneration will depend upon their qualifications. Application forms may be requested from the Institute for the Medical Humanities, University of Texas Medical Branch, Galveston, Texas 77550.

Washington University School of Medicine

At the dedication of the new Archives and Rare Book Annex of the School of Medicine Library on June 6, 1975, Dr. Bernard Becker, Professor and Head of the Department of Ophthalmology, presented to the Library his collection of rare medical books. The collection, which numbers 600 volumes dating between the 14th and the 20th centuries, includes important works on ophthalmology. The library plans to produce a printed catalog of the Becker collection.

Appointments

Dr. Judith W. Leavitt has been appointed Assistant Professor in the Department of the History of Medicine, University of Wisconsin Center for Health Sciences, Madison. A Maurice L. Richardson Fellow in the same department since 1973, Dr. Leavitt recently received her Ph.D. degree from the History Department, University of Chicago. Her dissertation is entitled "Public Health in Milwaukee 1867-1910." Dr. Leavitt will teach topics of American Public Health and add further strength to the teaching program in medical history at Wisconsin.

The University of Minnesota has announced the appointment of Malcolm J. Kottler as Assistant Professor of the History of Science and Technology in the Department of Ecology and Behavioral Biology and the Bell Museum of Natural History, effective in September 1975.

PROGRAMS OF MEETINGS

College of Physicians of Philadelphia, Section on Medical History

May 3, 1975: Special session in honor of Charles D. Meigs, Lawrence Charles Parish, presiding. Presentation of the Waugh portrait of Charles D. Meigs, J. Wistar Meigs; Acceptance by the College of Physicians, John P. Hubbard; Announcement of the loan to Jefferson Medical College, Paul A. Bowers; "The Artist, Samuel Waugh," Abraham Davidson; "Charles D. Meigs' Place in Philadelphia Medicine," W. Robert Penman; "An Epidemiologist looks at the Famous Quarrel between Meigs and Oliver Wendell Holmes," J. Wistar Meigs.

Medical Historical Society of Western New York, Buffalo, N.Y.

May 19, 1975· Special meeting to honor Dr. Rudolph E. Siegel for his contributions to the history of medicine, with the presentation of a plaque to Dr. Siegel, jointly sponsored by the Historical Society and the School of Medicine, State University of New York at Buffalo.

Officers elected for 1975-76 are: Thomas C. Bumbalo (president) Joseph C. Lee (vice president), James W. Brennan (secretary), Ronald E. Batt (treasurer), Irving Wolfson (corresponding secretary).

Washington Society for the History of Medicine, Washington, D.C.

May 17, 1975: Dinner meeting. "The Author and the Doctor in Modern French Literature," Rev. Joseph N. Moody.

NEWS FROM ABROAD

Edinburgh

The XVth International Congress of the History of Science will be held in Edinburgh, August 10-19, 1977. A preliminary announcement will be widely circulated in March 1976. The reply slip accompanying the circular must be returned if further communications are desired. Copies of this first circular will be supplied on request by the secretary, Dr. Eric G. Forbes, History Department, University of Edinburgh, 50 George Square, Edinburgh EH3 9JY, Scotland.

Farrar Prize in the History of Psychiatry

The Clarke Institute of Psychiatry has announced a $1,000 Research Award, named in honor of the late Dr. Clarence B. Farrar, Professor Emeritus of Psychiatry at the University of Toronto, and Editor of the American Journal of Psychiatry for more than 34 years. The Farrar Prize will be presented bi-annually subject to the decision of the Prize Committee. Contributions, which must have been completed not more than four years prior to submission, are invited from any person on any topic relating to the history of psychiatry in Canada and the United States. Submissions for the first Prize must be made by December 31, 1975, to Dr. Alexander Bonkalo, Chairman, Farrar Prize Committee, Clarke Institute of Psychiatry, 250 College St., Toronto, Ontario M5T 1R8, Canada.

London

A gift of £300,000 has been given by the Barnett Shine Charitable Foundation to the Royal College of Surgeons for the development of its library.

McGill University

Readers of the *Bulletin* are reminded that the Osler Library of McGill University publishes a *Newsletter* three times yearly (February, June and October). Those who would like to receive this publication are invited to send their requests to the Editor, Osler Library Newsletter, Room 429, McIntyre Medical Sciences Building, 3655 Drummond St., Montreal, Quebec H3G 1Y6, Canada.

Rome

Dr. Adalberto Pazzini (1898-1975), one of Italy's leading historians of medicine, died at Rome on May 10, after a long illness. Dr. Pazzini was formerly Director of the Institute of the History of Medicine at the University of Rome as well as President of the Société Internationale d'Histoire de la Médecine, of which he was Honorary President at the time of his death. He was the author of numerous articles and books including a two-volume history of medicine which recently appeared in a new edition. Those who attended the International Congresses at Rome and Salerno in 1954 and at Siena in 1968 will recall him as a gracious host as well as a distinguished scholar. In expressing our sorrow for the death of Professor Pazzini we should like to extend sincere condolences to Signora Pazzini.

BOOK REVIEWS

JOSEPH R. QUINN (Editor). *Medicine and Public Health in the People's Republic of China.* Bethesda, Md.: National Institutes of Health, 1972 (DHEW Publication No. NIH 72-67). xii + 305 pp. Ill.

To publish a volume on medicine and public health in the People's Republic of China is undoubtedly a very meritorious undertaking in spite of the unavoidable weaknesses which such a book must have. Unfortunately the country which harbors about one-fourth of the world's population is still in a state where very few reliable statistics are available even for the government itself. And what statistics a totalitarian government publishes are not trustworthy anyhow. I remember vividly that my late teacher, Henry E. Sigerist, when faced with the task of publishing a second edition of his *Socialized Medicine in the Soviet Union*, discovered that the statistics he had used for the first edition had been doctored. He therefore delegated this task to a Russian.

Another source of information, scientific journals, were unfortunately stopped or transformed during the Cultural Revolution (1966). It is therefore not advisable, as some of the contributors to this volume do, to take at face value such declarations of the Chinese government as that "infectious diseases have been wiped out" or, in particular, "cholera" or "syphilis" has been wiped out." If they should appear, this could of course, as in the past, always be explained by American "bacterial warfare."

Many of the contributors to this volume are Chinese born. They came to the United States as children or students and several of them, though they preferred to remain in the States, were stirred by the patriotic awakening of the Chinese after 1949, all the more as it was in their case not tempered by experience. This phenomenon has been observed earlier, e.g. in Turks, Italians or Germans. Some of the contributors make their judgment on the basis of a four-week sojourn. I have strong doubts that such superficial impressions are actually more valuable than purely literary studies or the interviewing of emigrants.

It is typical for the confusion among specialists in Chinese medicine that the so-called wiping out of the "four pests" by the Chinese government is mentioned at least four times in this book, but never are the four pests the same. As pests there are mentioned mosquitos, flies, rats, sparrows, snails and bedbugs.

There are also unavoidable gaps. For example opium is not discussed in spite of the fact that China is a tremendous producer of opium, and if it has succeeded in eradicating the opium habit, one would like to know with what methods. There is also no mention of who treats the upper class of the new regime, though it seems unlikely that this is done by "barefoot doctors." But in spite of these strictures this is a very valuable book, and it is of extraordinary practical and theoretical interest to learn how the present Chinese government handles its tremendous health problems.

The book is subdivided into three sections: "Chinese Medicine Through the Ages," "Health Care Organization and Administration," and "Health Problems." The first section opens with a most excellent essay by Ralph C. Croizier whose book on the same subject is a classic. He describes how the few Western physicians (as they are called in China) were opposed to the "traditional doctors." But the government could not maintain the same attitude for practical (better to have a pseudo-physician than none) and political reasons. The rehabilitation of traditional medicine had already begun under Chiang Kai-shek. Under the early Mao the "Chinese doctors" became auxiliaries, in the "leap forward" period, partners and teachers, and in the Cultural Revolution the "barefoot doctors," who are partly traditional, are, at least in terms of propaganda, the leaders of medicine. The rehabilitation of traditional medicine fits well also into the patriotic tendencies ("patriotic health campaign") of the regime. What is definitely new is not the use of half-doctors, but their mass use in preventive medicine. A paper by Janet W. Salaff gives a good survey of the role of the family in health care. In spite of the considerable transformations of the Chinese family, the family still plays an important role in health care. In his essay "Surgery Past and Present," John Z. Bowers gives an excellent, succinct picture of the situation. The two articles by Dr. Y. P. Chen on acupuncture and pharmacology are definitely low points in the book. One has to look at the illustrations of these articles to see that what is presented as "objective" is in reality political propaganda. The article on acupuncture in worthless. Chen reports extensively the whole abracadabra on *Yin* and *Yang* and *Chinglo* (Meridians). In one short sentence he admits that 20 years of "modern research efforts" have "not provided conclusive proof of the anatomical existence of the traditional meridians" (p. 77), but in one place (p. 81) this even suggests to him the possible truth of the *Chinglo* theory. Chen reports faithfully all the miracles of acupuncture, unfathomable, according to him, to "Western minds." He ignores the fact that such "Western minds" as naturopaths, faith healers, parapsychologists, homeopaths, etc., etc., daily perform the same miracles. On p. 85 he reports the cure of 111 blind patients (what kind of blindness?) by acupuncture. This is illustrated by a photograph (p. 86) showing three Chinese children and two soldiers. Nobody doubts the existence of acupuncture anesthesia. But in all fairness one might mention that the same miracle has been performed through hypnosis by "Western minds" again and again, since Jules Cloquet (1829) and Esdaile (1845). And that without the benefits of a political situation where doubts in "Chinese medicine" are acts of treason. Dr. Chen's discussions on pharmacology, of which he supposedly knows something, sound as if they were taken out of Dioscorides. Apparently the old Chinese pharmacopoeia, which actually contains some very valuable substances, was composed of numerous panaceas.

Under "Health Care Organization and Administration," Tao-tai Hsia reports on laws and public health. Perhaps the most important element of his interesting review is that since 1960 the government has no longer seen fit to freeze its attitudes into laws, and laws seem always to have been rather "exhortative." Susan B. Rifkin discusses health care for rural areas, a central problem as 80% of the Chinese population is still agrarian. The main measures have been extension of the facilities (founding of county hospitals, clinics, health stations and centers), use of the traditional practitioners and rotation of city practitioners in the country through mobile medical teams. The tendency is to finance agrarian health care through the local "commune." Victor Sidel reports on medical personnel and their training. He estimates that in 1949 there were 30,000 "Western doctors," in 1966, 150,000. He believes that the number of traditional physicians remained unchanged during this period (500,000). Besides these two types of doctors there exist the graduates of so-called "middle medical schools." They seem to number about 170,000, that is more than doctors of Western medicine and fewer than doctors of Chinese medicine. They correspond to the Russian feldsher. The Cultural Revolution closed the medical schools and for three years there were no new classes (1966-1969). Now the schools have been reopened with a very reduced curriculum (3 years) and with students "chosen by their fellow workers." The innocent author seems not to know that in totalitarian countries this expression does not mean literally what it says in Western terms but is equivalent to being nominated by bureaucrats. The Cultural Revolution also introduced the so-called barefoot doctors of whom there seem to exist one million and who receive only a three-month training. They nevertheless seem to handle a great many medical problems as evidenced by the table of contents of the barefoot doctors' handbook and a standard list of items included in a barefoot doctor's bag. These lists are particularly valuable. Richard P. Suttmeier reports on the Chinese Academy of Medical Sciences which is structured after the Russian model.

In the final section, "Health Problems," the article of Leo Orleans on population dynamics is one of the most informative and realistic elements of the book. S.D.J. Yeh and Bacon F. Chow report very competently on nutrition problems. Unfortunately their historical data are often wrong. For example: neither was recognition of the goiter problem by the Chinese "earlier than that in the Egyptian and Roman medical scripts probably written about 700 B.C." nor was the use of iodine in the treatment of goiter not recorded until the publication of Prosser in 1769 nor was the concept of iodine deficiency first suggested by Marine in 1909. Kun-yen Huang gives a good survey of the status of infectious and parasitic diseases. Haitung King's contribution concerning cancer research organization and preventive programs is not very substantial. Ruth Sidel shows the great role the little red book of Mao plays even in the treatment of mental diseases. In this respect she rightly quotes a Chinese leader: "We put politics in command."

The Chinese communists have undoubtedly done what they had to do, faced by the need to increase productivity in a disease-ridden and poor country. Thus they have emphasized above all public health, which is the more effective instrument, and done relatively little for curative medicine. Even less has been done for research since at the present stage of the game they can still always make use of the results of scientific research from the Western imperialists. What they have done is very interesting, but to a large extent it is not new at all. All societies unable to produce a sufficient number of efficient scientific doctors for the countryside have to train a cheaper class of practitioners. The majority of European populations were, after all, treated by barber surgeons up to the nineteenth century. The French had the so-called officiers de santé up to the end of the nineteenth century. The Russians still have the feldshers. The Americans solved their problems ingeniously in deciding during the nineteenth century that everybody who calls himself a doctor *is* a doctor and leaving the care of the majority of the population to the products of medical schools which had two terms of four months. Therefore the behavior of the Chinese leadership is quite logical and has undoubtedly netted results. But whether it is an example for the West is open to doubt. In dealing with Chinese medicine the golden words of John Z. Bowers on page 60 of the book should always be remembered: "Accomplishments in medicine and public health are major propaganda instruments for the Chinese government—to a degree that is probably unequalled in history."

Reviewed by ERWIN H. ACKERKNECHT, M.D., Emeritus Professor of the History of Medicine and Director of the Institute of the History of Medicine, Universitat Zürich, Zurich, Switzerland.

CHARLES COURY. *Grandeur et déclin d'une maladie.* La tuberculose au cours des âges. Suresnes: Lepetit, 1972. 264 pp. Ill.

This is a highly condensed book that covers an immense amount of tuberculosis history. At times the coverage is a little thin, but that is a small defect in a book that places so much stress on perspective. The author had an ideal background for the history he has written, for he was both a practicing tuberculosis expert and a medical historian. He was professor of diseases of the chest at the University of Paris and head of the pneumology department in the famous Hôpital de l'Hôtel Dieu, where much French medical history has been made. He has written a history of medicine (1963) with his close associate Maurice Bariéty, who, also, has been both phthisiologist and medical historian.

Coury's history of tuberculosis through the ages is divided into seven major sections, as follows: pulmonary tuberculosis in broad aspect, extra-pulmonary tuberculosis, the nosology of the lesions of tuberculosis, early controversies on the etiology and pathogenesis of tuberculosis, the treatment of the disease, the public campaign against tuberculosis, and general considerations on its epidemiology.

Some prior knowledge of the history of tuberculosis is an advantage in following the fast-moving text, for there is little space to dwell on events leading up to major advances. Yet this background is by no means neglected, as witness the story of the slow development of the concept of animalcular contagion, culminating in the precise studies of bacteriology near the end of the nineteenth century. A few pithy titles point up the slow march of progress, e.g., "the thwarted progress of 2,000 years and the success of less than a hundred." All the great names in the history of tuberculosis are there, and in the author's own unique type of index a very brief biographical note is set forth for each.

In addition special bibliographies are printed, including a broad selection of papers and books dealing with historical aspects of the disease and a special bibliography of works devoted to epidemiology and public health. Besides these there are footnotes in abundance documenting a wide variety of special considerations. The chapter on epidemiology begins with the striking heading "The birth, life and death of an infectious disease."

Each chapter repays careful study. The first deals with the long history of phthisis as a clinically fairly well recognized disease, described in ancient texts, emphasized in the works of the giant commentators of Greece, Rome, and Byzantium, and noted at length in the texts of the Arabic physicians and the pioneers in the Middle Ages and Renaissance. The chapter on extra-pulmonary tuberculosis naturally makes more than casual reference to the "royal touch." The long contest over contagion is well outlined in the section devoted to etiology and pathogenesis. The last three chapters deal more specifically with modern times, and the continuing problems of today, especially chemical treatment of the disease and measures to prevent its spread and development in individual cases.

The chapter on treatment is detailed, opens with the long-held concept of tuberculosis as an incurable disease, and carries the story forward through the periods of climatic and sanatorium therapy, old fashioned non-specific drug treatment, artificial collapse therapy by pneumothorax and surgery, surgical resection and, finally, modern chemotherapy. The latter, somewhat surprisingly, is treated rather lightly, but it seems evident that this is intentional. The author clearly is cautious, with perspective in mind. The drugs in use, however, are listed with notation on their dates of original use. The year 1952 is accorded special note for the introduction of isoniazid. The reader is spared the details of controversy over the respective roles of the brilliant men who introduced the drugs, and some indeed are omitted.

The chapters on the antituberculosis campaign, and specific prophylaxis by eliminating the dangers of exposure and immunizing susceptible subjects, are written in the light of today's overwhelming scientific reports. The interesting note is made that at least 300 million persons have been vaccinated with BCG.

At the end of the book is a two page list of more or less celebrated persons who have been victims or supposed victims of tuberculosis, including (1) sovereigns and figures of state, (2) philosophers and theologians, (3) writers, musicians and artists, (4) physicians and men of science. It is an intriguing, if probably much abbreviated list, and a unique addendum to the usual type of history.

The book is recommended for chest disease specialists, medical historians and libraries of medical history. Its scope is wide, and its detail is correspondingly limited.

It is unbiased as respects the achievements of leading countries, and faithful in noting the documentation and synthesis of records involved in presenting the history of the disease.

Reviewed by ESMOND R. LONG, M.D., Emeritus Professor of Pathology, University of Pennsylvania, Philadelphia, Pa.

LEONARD J. T. MURPHY. *The History of Urology.* Incorporating in Part I *L'Histoire de l'urologie,* by Ernest Desnos. Springfield, Ill.: Charles C Thomas, 1972, xiii + 531 pp. Ill. $32.50.

We could wisely obey and practice the prudent advice offered by Santayana and repeated by Murphy: "He who is inclined to ignore the past must be prepared to repeat it." Therefore, it first becomes important to recognize some omissions (see Preface) in Murphy's English translation of Desnos' work. For example, the contributions of Spanish medicine to urology should be mentioned briefly:[1] a Catalan manuscript dated 1466, a monographic study of urine, *Aci comenca lo conocement de las Orines* ("Thus begins the knowledge [analysis] of the urines"), Julian Gutierrez' *Cura de la piedra y dolor de la vjada y colica rrenal* (sic).[2] Further, in discussing the administration of anesthesia during lithotomy, neither the author nor Desnos referred to Bullein: "[Mandragora] . . . bringeth sleepe, and casteth men into a trans on a deepe terrible dreame, untill he be cut of the stone."[3]

In the Preface (p. ix) Murphy stressed that Desnos' *L'Histoire de l'urologie* has long been out of print and is now a collector's item. Gnudi has informed me that in the special collections at UCLA Biomedical Library there are two complete copies each with Desnos' signature, one incomplete copy, and one copy in Desnos' *Encyclopédie française d'urologie*, adding up to four copies, three complete and one incomplete.

On returning to the beginning pages of Desnos' writings we noted that on the examination of nine thousand mummies from Egypt Smith (p. 5) found only two bladder and two kidney calculi. A vesical calculus approximately seven thousand years old was found in the bony pelvis of a teenage male; and on analysis was found to contain uric acid, calcium oxlate and ammonium magnesium phosphate. These findings are common to some bladder stones of today; hence, Murphy could have added explanatory footnotes stating that the uric acid component could have been related to metabolic changes while the ammonium magnesium phosphate portion could be related to an infection by the genus *Proteus* and the rôle of chemotherapy in this type of infection. In addition, a young male might have had congenital bladder neck obstruction, as described by Guthrie (p. 380)

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[1] Benjamin Collection, UCLA Biomedical Library Sanchez (1594) is lacking in this Collection. In 1914 Ernest Moliné i Brasés translated the Catalan manuscript (Estampa de la Casa Provincial de Caritat).

[2] Martha Teach Gnudi of UCLA Biomedical Library, Head of History and Special Collections Department supplied these data See Luis Granjel, *Historia de la medicina española* (Valencia, 1962).

[3] Wm. Bullein, *Bulwarke of Defence* (London, 1579), pt. 1, "The booke of simples," fol 42r. Benjamin Collection.

As time and printed pages moved onward we noted changes in the pace of medical practice. In 1497 (p 49) Blondus offered this advice to improve the quality of medical services. "It is more commendable to make mistakes (for these will be fewer) with Galen and Avicenna than to gain renown with others. . . ." Furthermore, in 1731 La Peyronie and others[4] founded the Académie de Chirurgie and thus displaced the barbers and forbade them to practice surgery, mainly lithotomy, after 1743.

The repetitious use of illustrations (da Vinci, fig. 4.1; Vesalius, fig. 4.3; and Verheyen, fig. 4.10) are common faults in the historical writings of numerous authors. Neither Desnos nor Murphy considered the rôle of urethral diverticulum in recurring urinary tract infection in the adult female. Furthermore, Charles Brenton Huggins of the University of Chicago did not receive proper recognition for his time-tested contributions to the study and treatment of carcinoma of the prostate gland. He was awarded the Nobel Prize (co-winner 1966) in Medicine and Physiology, the only urologist to have received this prestigious and deserving honor. Morgagni (p. 274) gave us one of the earliest anatomico-pathological descriptions of bladder changes associated with vesico-ureteral reflux ". . . when (the bladder) contracting itself to discharge the urine forces so much of the fluid (urine) through those enlarged orifices (the ureters)." Murphy treated this subject with brevity yet maintained thoroughness.

Roentgen's epoch-making discovery of the ". . . x-rays (as I will call the rays, for the sake of brevity)," November 8, 1895, is not reported either in the name index nor in the reference listings. He received for this discovery the first Nobel Prize for Physics in 1901. In the opening sentence of a section, "Diagnostic Radiology" (p. 482), Murphy briefly introduced Roentgen and his work to the reader. Furthermore, the author did not refer to the use of x-ray movies (cinematography) in the study of the patient with certain urological diseases. John MacIntyre, a Glasgow physician, in 1896 was experimenting "with the best methods of obtaining rapid exposures with a view of recording the movements of organs of the body by x-rays." More recently two medical centers were interested in the use of x-ray movies to study urological diseases; namely Hinman, Jr., *et al.*, of the University of California (San Francisco), and Benjamin, *et al.* of the University of Rochester (New York). In 1954 these investigators independently published their preliminary findings.

Although footnotes are infrequent in this comprehensive study, when they appear they proved to be useful and clarified and polished a point at hand. Both name and subject indices are adequate and serve the reader well in guiding him to the material he may wish to study.

Our urological knowledge has become so accumulative, diversified, and specialized (as Murphy stressed in his Preface), that one could justify the publication of a History of Pediatric Urology, Renal Transplantation, or Radiologic Urology; and several other titles could be suggested on short notice.

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[4] Toby Gelfand, "The Paris manner of dissection," *Bull Hist Med* , 1972, *46* 127 (n. 111) and 128 (n. 114).

Surely another history of urology will appear soon, and thus the past will ever continue to give life to the future. Each author will make a mark from his work, but it will be difficult to match Murphy's great contribution to history of urology through his own writings and the English translation of Desnos' *L'Histoire de l'urologie*. Nor could you add a more informative book to your expanding bookshelves.

Reviewed by John A. Benjamin, M.D., Department of Urology, Senior Urologist, Southern California Permanente Medical Group, Los Angeles, Calif.

Adalberto Pazzini. *Storia dell'arte sanitaria dalle origini a oggi*. Roma: con i tipi delle Arti Grafiche E. Cossidente, per conto delle "Edizioni Minerva Medica," Torino, 1973. 2 vols. Ill.

This work is a slightly revised edition, in larger format, of the late Professor Pazzini's two-volume *Storia della medicina* (Milano, 1947), which has long been out of print. The revisions are largely minor and include some changes in section headings and illustrations, as well as occasional additions, such as the sections on psychedelic drugs and gerontology at the end of the second volume. It lacks the bibliography of the earlier work, but is provided with both name and subject indexes.

Reviewed by Martha Teach Gnudi, Head, History and Special Collections Department, Biomedical Library, University of California, Los Angeles.

University of Texas Medical Branch. *A Catalog of Books before 1700 in the Moody Medical Library*. Compiled by Margaret Gaskill, Edited by Cynthia Robinson. Galveston: University of Texas Medical Branch, 1972. ix + 118pp.

It is always pleasant to welcome a new volume that records the holdings of a medical library, thus making its riches known both to potential users in the community and to a wider audience as well. A perusal of the Introduction recalls a period some three decades ago when the Medical Library at Yale was faced with publication problems similar to those encountered at Galveston. Decisions sometimes quite different from the generally accepted pronouncements of the Library of Congress and the Library of the Surgeon-General's Office were made — and then had to be followed. It was not always easy. But thanks to the steadfastness of two well-trained cataloguers the task was accomplished. It would appear that the University of Texas Medical Branch Library was equally fortunate in its staff members, though they were perhaps not called upon to stray quite so far from their accustomed paths.

In any event, the volume under review is produced in a more generous style than the Cushing catalogue at Yale. It consists of 986 numbered entries arranged alphabetically by author, and the volume is blessed with a chronological index and also a printers and publishers index. The catalogue brings together some ten groups of books donated to or purchased by the University of Texas in the last few years. The stated aim "to provide a full bibliographic entry for each title" is somewhat misleading, particularly if one's knowledge of bibliography has been more or less acquired by study of J. D. Cowley. Transcribing "the body of each entry . . . exactly as it appeared in the book" and adding "collection note, notes, bibliographical citations, and analytic entries," helpful as these pieces of information may be, do not really constitute a full bibliographical entry. One misses, for example, a statement of the size of the book; and at least some indication of its physical structure would have been most acceptable, if exact *bibliographical* information was looked upon as too time-consuming to gather and include. Notation of the collection from which the individual books have come ("collection note") preserves some flavor of the various donations — though its appearance from time to time at the end of the title is a trifle disconcerting. The "analytical entries" are most helpful and in line with the generous treatment accorded all entries.

The chance encounter of an item that had made its way from Yale to Texas (No. 769, Rivière's *Practice of Physick,* London, 1668) gives one a warm feeling of scholarly exchange.

Few typographical errors were noticed, but the one at the top of the right-hand column of page 91 has not yet been unscrambled.

Reviewed by MADELINE E. STANTON, Historical Consultant, Yale Medical Library, New Haven, Conn.

RUDOLPH VIRCHOW *Post-Mortem Examinations and The Position of Pathology Among Biological Studies,* Metuchen, N.J.: Scarecrow Reprint Corporation, 1973. x + 129 pp.

This small volume is a reprint of the master pathologist Rudolph Virchow's manual of postmortem examination. Originally published in 1875, it represents a clearly written, systematic presentation of proper autopsy technique. Virchow called upon his thirty years of experience at the autopsy table in an attempt to bring order to the rather disorganized state of autopsy pathology. He also hoped to provide a rational procedural approach for the physician required to perform autopsies in medico-legal cases. Also included, and easily the most readable portion of the book, is the Croonian Lecture which he delivered before the Royal Society of London in March 1893, entitled, "The Position of Pathology Among Biological Studies."

Walter Putschar, in an excellent introduction, emphasizes the importance of Virchow's work. Traditionally, the postmortem examination followed no protocol, had been haphazardly performed, and was solely concerned with the diseased organs. Virchow (together with Rokitansky in Vienna) introduced a new philosophy of technique. The cursory examinations of the past would no longer be tolerated.

Autopsies were to be complete, all organ systems examined, a written protocol followed, and the results would stand on their own merit. His ideas had the influence that he had hoped for. As his students began filling the newly created chairs of pathology throughout Germany, his technique became the standard against which others were judged.

The final portion of the book is devoted to the Croonian Lecture in which Virchow attempts to trace the development and growth of pathology from the sixteenth century. Citing the importance of such giants as Vesalius, Paracelsus, and Harvey, in the downfall of the concepts of humoral pathology and Galenism, Virchow then traces the rise of the various schools of pathology (e.g., Regionism, Organicism) which preceded his own great contribution of the cellular nature of disease. His lecture ends by characterizing pathology as a science to which "we are indebted for the knowledge that the opposition between healthy and diseased life is not to be sought in a fundamental difference between the two lives, not in an alteration of the essence, but only in an alteration of the conditions."

Reviewed by ROBERT J. MICIOTTO, Macy Fellow in the History of Medicine and the Biological Sciences, Institute of the History of Medicine, The Johns Hopkins University, Baltimore, Md.

ELIZABETH W. ETHERIDGE *The Butterfly Caste.* A Social History of Pellagra in the South. Westport, Conn.: Greenwood Pub. Co., 1972 (Contributions in American History, 17). ix + 278 pp. $11.00.

As the subtitle suggests, this book more likely will be of interest to social historians than to those interested in the history of medicine.

The author had access to many sources of information not readily available, for example, personal letters of Joseph Goldberger, the Transactions of the National Association for the Study of Pellegra, many newspaper clippings from the early decades of this century and annual reports of state hospitals. Usually there was one footnote per paragraph, with several citations per footnote. Thus it is difficult to know the source of certain information of interest.

I differ from the author in the interpretation of an early paper of Goldberger (*Pub. Health Rep.* 1914, *29:*1683.) I believe he had realized what pellegra wasn't, not what pellegra was, at that time. Goldberger was quite emphatic that pellegra was not of infectious origin because none who ministered to the ill ever contracted the disease. He admitted at that time that he could not identify the dietary agent in question, but recommended a reduction of the intake of cereals and an increase in the intake of "fresh animal food components."

This realization was made possible because Goldberger was an expert in infectious disease; an expertise mentioned in the book only in passing. In 1914 the belief that pellegra was of infectious origin was an hypothesis acceptable to many physicians.

The author emphasizes Goldberger's dietary recommendations which were quite radical, but minimizes the expertise that made them possible.

Often knowledge of history can be greatly improved as material previously lost or ignored becomes available. Inaccessibility of reference material is a disadvantage if one wishes to examine the data upon which a certain viewpoint is based. I have reservations about the ability of the author to interpret the history of medicine and trust that her ability to interpret general history is not subject to similar limitations.

Reviewed by LESLIE M. KLEVAY, M.D., S.D. in Hyg., Department of Medicine, University of North Dakota, School of Medicine, Grand Forks, N. Dak.

THE BULLETIN RECENTLY RECEIVED*

Howard B. Adelman (Editor). *The Correspondence of Marcello Malpighi*. Ithaca and London: Cornell University Press, 1973. 5 vols. $95.00.

Garland E. Allen. *Life Science in the Twentieth Century*. New York: John Wiley & Sons, 1975. xxiii +258 pp. Ill. $9.95.

Odin W. Anderson, *Blue Cross since 1929: Accountability and the Public Trust*. Cambridge, Mass.: Ballinger Publishing Co., 1975. 118 pp.

Biology of Man in History. Selections from the *Annales*, Economies, Sociétés, Civilisations. Edited by Robert Forster and Orest M. Ranum; translated by Elborg Forster and Patricia M. Ranum. Baltimore and London: The Johns Hopkins University Press, 1975. x + 205 pp. Ill. $12.00 (cloth); $2.95 (paper).

Harris L. Coulter. *Divided Legacy: A History of the Schism in Medical Thought*. Vol. 1: The Patterns Emerge: Hippocrates to Paracelsus. Washington: Wehawken Book Co., 1975. xxxii + 537 pp. $17.50.

John Cule (Editor). *Wales and Medicine*. An Historical Survey from Papers given at the Ninth British Congress on the History of Medicine at Swansea & Cardiff, 4-8 September 1973. Llandysul: J. D. Lewis & Sons, Gomer Press, 1975. xi + 249 pp. Ill. £3.00.

John Gordon Freymann. *The American Health Care System: Its Genesis and Trajectory*. With a Foreword by John S. Millis. New York: Mecom Press, 1974. xix + 407 pp.

R. K. French. *Anatomical Education in a Scottish University, 1620*. An Annotated Translation of the Lecture Notes of John Moir. Aberdeen: Equipress, 1975 (Texts in the History of Medicine, No. 1). xix + 86 pp. Ill.

E. Ruth Harvey. *The Inward Wits*. Psychological Theory in the Middle Ages and the Renaissance. London: The Warburg Institute, University of London, 1975 (Warburg Institute Surveys, VI). 96 pp. Ill. £2.00.

Nancy D. Lane and Kathryn L. Kammerer. *Writer's Guide to Medical Journals*. Cambridge, Mass.: Ballinger Publishing Co., 1975. xi + 327 pp.

L. R. Lind. *Studies in Pre-Vesalian Anatomy: Biography, Translations, Documents*. Philadelphia: The American Philosophical Society, 1975. 344 pp. Ill. $18.00.

E. Snorrason. *C. G. Kratzenstein, professor physices experimentalis Petropol. et Havn. and His Studies on Electricity during the Eighteenth Century*. Odense: Odense University Press, 1974 (Acta Historica Scientiarum Naturalium et Medicinalium, 29). 206 pp. Ill. Dan. dr. 80.-

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Erratum

In the final printing of L. H. Wells' article, "New Light on the 'Sylvester' Family of Anatomical Broadsheets" (*Bull. Hist. Med.,* Summer 1975, *49:* 270-272), footnote 9 at the end of the article was dropped. The missing footnote should read: "J. G. de Lint, 'Fugitive anatomical sheets,' *Janus,* 1924, *28:* 78-91."

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VOLUME 49 WINTER, 1975 NUMBER 4

MICHAEL DAVIS AND THE TRANSFORMATION OF THE BOSTON DISPENSARY, 1910-1920*

RALPH E. PUMPHREY

In 1910 the Boston Dispensary was a locally known institution, considered a good, if undistinguished, descendant of an eighteenth-century medical charity. In 1920 it was recognized nationally as one of the pioneering medical institutions of the twentieth century. This transformation was largely attributable to the efforts of Michael M. Davis (1879-1971) who thus launched a half century of leadership in the complex arena of health care. Davis' success resulted from his ability to relate constructively to pressures from within the medical and scientific communities and to apply appropriate elements of the pervasive Progressive Spirit.

The rapid advances in scientific medical knowledge during the previous several decades had remained largely inchoate in the medical curriculum until

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*This article is part of a biographical study of Michael M. Davis, Ph.D. In addition to published records cited, the author had full access to manuscript records in Dr. Davis' personal files in his home, his professional files at the New York Academy of Medicine, and the Boston Dispensary records at the Tufts-New England Medical Center. The study was made possible by grants from Mr. Nathan Levin of New York and by a contribution from him to the National Endowment for the Humanities which was matched by the Endowment (Grant No. RO 6929-73-80)

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BULLETIN OF THE HISTORY OF MEDICINE 49 451-465 (1975)

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the famous study by Abraham Flexner in 1909-1910.[1] The shock waves resulting from Flexner's report were violent. The only Boston institution to be commended was the Harvard Medical School, and it was seen as "good" only in comparison. The prestigious Massachusetts General Hospital, upon which Harvard relied for much of its clinical training, was criticized for using seniority and a rotating staff in its organization. Of the Boston Dispensary the scholarly curmudgeon said merely that it furnished abundant clinical material "under the usual more or less imperfect control."[2] Clearly, if the Dispensary were to maintain a prominent position in the ensuing institutional maneuvering, it would have to modernize. In the same month that Flexner visited Boston, the Dispensary board decided to seek a new executive.[3]

The role of treatment in preventing the spread of infectious disease was coming to be recognized as contributory to, if not actually, a public health function.[4] The Dispensary, with its extensive pioneering tuberculosis and venereal disease services, was deeply involved in this confusing and potentially friction generating borderland between public health and medical care.

It was only five years since Richard C. Cabot, director of the Out-Patient Department of the Massachusetts General Hospital, had formalized the burgeoning interest in the social aspects of illness and their effects on treatment by establishing, in 1905, a social service program.[5] The idea had caught on both locally and nationally, and the Dispensary had employed one social worker, beginning in 1908.[6]

Progressivism placed scientific management in the ascendent. Up to 1910 medical professional and institutional literature had reflected this only superficially. Richard Cabot was hinting at it,[7] and he and some of his colleagues may have been exposed to it through his brother, Philip Cabot, who was then moving into business and industrial management. The dominant Dispensary board member, Edward R. Warren, had a business man's concern for efficient operation. Both he and Richard Cabot were active in the Chamber of Commerce sponsored "New Boston" movement and it is reasonable to infer that they were deeply impressed by the Flexner report, with its pervasive emphasis on efficiency.

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[1] Abraham Flexner, *Medical Education in the United States and Canada* (New York: General Education Board, 1910); Richard C. Cabot, "The doctor's dilemma," *Boston Medical and Surgical Journal (BMSJ)*, Oct. 27, 1910, *163:* 707; Rosemary Stevens, *American Medicine and the Public Interest* (New Haven· Yale University Press, 1971).

[2] Flexner, *op. cit.*, pp. 240-243; 261-263. The Boston Dispensary is mentioned on p. 241.

[3] Boston Dispensary, Minutes of the Board of Managers (BD Minutes), Oct. 22, 1909.

[4] Barbara G. Rosenkrantz, *Public Health and the State: Changing Views in Massachusetts, 1842-1936* (Cambridge: Harvard University Press, 1972).

[5] Richard C. Cabot, *Social Service and the Art of Healing* (New York: Moffat, 1928); Garnet Isabel Pelton, "Hospital social work," *The Outlook*, April 2, 1910, 767-770; Ida M. Cannon, "Social service in the Massachusetts General Hospital," *Transactions* of the American Hospital Association, 1912, 113-128.

[6] Boston Dispensary *Annual Report (BDAR), 1908*, 18-19, Mrs. Elizabeth R. Day, interview, August 10, 1968; Michael M. Davis (MMD) interview, April 8, 1970.

[7] Richard C Cabot. "Some suggestions for organization of out-patient medical work," *Transactions*, American Hospital Association, 1907, 177-178; "The doctor's dilemma," *BMSJ*, Oct. 27, 1910, *163*· 707; "The economic cost of diseases," *BMSJ*, Nov. 3, 1910, *163:* 743.

In its more than a century of existence, the Dispensary had evolved into a fairly typical out-patient institution not connected with a hospital. Emerging specialization in medicine was reflected in the fifteen clinics, each separately organized and staffed by self-selected volunteer physicians who determined their own rotation of service. Since seniority was a prime consideration, quality of service tended to vary in relation to the ability and prestige of the senior physicians. To Flexner it was not only this uncertainty of quality, but the rapid changes in personnel involved in the rotating services, which made this system unsatisfactory for the clinical education of medical students.

Administration was primitive. There was no budget and no procedure for the orderly consideration of supply and equipment requirements. With income insufficient to meet all requests, a chaotic situation had developed. Furthermore, there was no provision for exchange of information between the specialized clinics, and from time to time controls broke down as physicians failed to return clinical records to files.[8]

After a search of nearly a year, Michael M. Davis, Ph.D., of New York, was selected to be the new Dispensary director. Although his grandfather had been an early president of the New York Medical Society, and he himself knew some prominent physicians, his preparation for the job was not in any of the health professions. As an undergraduate he had majored in the physical sciences, but in his graduate studies at Columbia University he had turned to economics and sociology under the guidance of Franklin Giddings, a noted intellectual leader of the Progressive movement. Historical perspectives were developed under James Harvey Robinson; Charles A. Beard, later a noted historian, was a student intimate. He explored various applications of rapidly expanding statistical methods of analysis with Franz Boas in anthropology, with Edward Lee Thorndyke in psychology, and with Edwin R. A. Seligman in economics. Seligman, in recommending Davis to be head of the New York branch of the United States Mint, had said: "He . . . is a thorough economist. He has also had considerable administration experience and is a good executive head. He is one of the ablest men I know and is withal a charming fellow."[9]

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[8] MMD interviews, April 6, 8, 1970; Mrs. Day interview, Aug. 10, 1968.

Davis' intellectual concern was with the processes of social change, but both before and after getting his degree in 1906, he sought practical outlets for this concern in settlement work, in the organization and leadership of programs of civic education, and in action-oriented research such as a widely acclaimed study of leisure-time facilities in New York City.

His settlement house and civic education experience prepared him to recognize and promote the value of social services in the Dispensary setting. His academic training attuned him to the cause of efficiency and effectiveness. By integrating his attributes, the assets inherent in the Dispensary, and the pressures for change, he transformed the unlikely situation of a somewhat antiquated medical establishment, shadowed by a great medical school and a world-famous hospital, into a base camp for change in the field of medicine.

Davis' judgement regarding the problems he faced is clear from the following generalized statement:

> The just criticism of dispensary work has been its relative inefficiency, due to inadequate equipment, insufficient staffs, incoherent organization. So long as the dispensary is regarded merely as a "soup kitchen" or a "feeder" [for hospital wards and medical teaching], it will continue to be treated as secondary and it will be second-rate.[10]

He "began in two directions (1) improve effectiveness, (2) obtain finances to pay for improvement."[11] Within three months several board actions set the course for future development. After four years Davis was able to say: "Gradually, also, we are coming to see that out-patient clinics or dispensaries are not merely the poor relation of the hospital . . . we see, in our Dispensary, medical problems which are worth developing for their own sake."[12]

Consultation with the staff soon showed that their most pressing concerns had to do with capricious purchasing. A well-planned annual budget would bring relief, but there were few reliable records on which to build, and no money with which to implement a budget if it were drawn. Davis persuaded the board to adopt a policy of annual budgets, effective in October 1911. Meantime, substantial borrowing was authorized to meet current needs, with the understanding that a fund-raising program would be developed during the year.

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[9] E. R. A. Seligman to Hon. A. Pratt Andrew, March 18, 1910. MMD personal files

[10] MMD, "The functions of a dispensary or out-patient department," *BMSJ*, Aug. 27, 1914, *171:* 341.

[11] Autobiographical note, MMD personal files.

[12] *BDAR, 1914*, 16.

At the same January 1911 meeting, a new set of by-laws and rules was adopted. Of particular significance for later developments was the brief, forceful new statement of purpose:

> To place the best medical treatment within the reach of those persons who would otherwise be unable to secure it. No other persons shall be deemed entitled to the benefits of the institution. No physicians of the Dispensary shall receive compensation from its patients for services rendered therein.[13]

The wording was sufficiently close to traditional pronouncements to allay suspicion, yet it challenged both board and staff by mandating excellence of service, while the two negatively stated limitations left doors ajar for future exploration. Patients were not required to be totally without funds, suggesting that some might be able to pay modest fees. Furthermore, physicians were not precluded from receiving compensation from the Dispensary.

Small charges for medicine were already an important part of Dispensary income. Although frequently waived, ten to twenty-five cents per visit in 1911 produced more income than the endowment, and three times as much as donations.[14] The significance of the new statement was that service could now be extended to low paid working men and women who could not afford a private physician. Taken together with the loophole regarding compensation to physicians, this later would permit the Dispensary to engage in a startling innovation.

Another rule specifically excluded the director from membership on the medical staff, which was to serve as the principal advisery body to the Board of Managers. As Davis saw it, administration should facilitate the application of science and technology to medicine, providing the latest drugs and equipment, as well as being efficient in non-medical operations.

Most immediately significant for operations was the new rule that "social workers may be provided by the Board of Managers to render services to any of the patients of the Dispensary." In Davis' hands this proved to be a strong tool for administrative development. Under Cabot at Massachusetts General Hospital social workers provided service only to patients designated by physicians.[15] At the Dispensary social work developed as part of "management' in cooperation with, rather than in subordination to, the medical staff. Davis saw social workers as the key auxiliary paid staff to help the physicians provide more effective, efficient service.[16]

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[13] BD Minutes, Jan. 12, 1911

[14] BDAR, *1911*, 34.

[15] See footnote 5, above

[16] *BDAR, 1911*, 29-30, *1913*, 11 and *passim*

Four to six hundred persons a day brought with them to the Dispensary not only medical but also social, economic, and other impediments. To ignore these problems might well jeopardize the value of the medical treatment given, or even mean that the treatment was inappropriate or detrimental. Davis said:

> The community is becoming wearied of a policy which spends two dollars a day for "curing" a patient in a hospital; and leaves untouched the home conditions which with reasonable certainty will compel the patient or his family to return for the same expensive process.[17]

By utilizing social work service fully, Davis argued, doctors could be confident that they were acting with as complete information as possible, and with maximum probability that the prescribed treatments would be followed.

Almost immediately the professionally trained social work staff was increased from one to nine,[18] charged with a prime responsibility to be alert for indications of social conditions such as other illness in the family, or overcrowding, which might influence the physician in his diagnosis or choice of treatment. Inability to speak English was common in a seaport city in the period of greatest influx of immigrants in the history of the United States, and helping the patient understand the nature of the illness and treatment, plan diets, readjust living arrangements, and secure financial help, were all important to the success of the physician's work. At admissions the task of excluding those whose income or connections with other institutions made them ineligible proved relatively minor; the major task there was to collect information which, put into statistical tables, would provide a better basis for policy development than personal impressions or benevolent good intentions. In the clinics the social workers were especially charged to serve as intermediaries, often getting the physician's instructions at the same time he gave them to the patient, making sure the patient understood, and bringing back to the physician information about special arrangements which might have to be worked out.[19]

Suspicious of arbitrary distinctions between the "poor" and the "not poor," Davis recognized the need for basic information from the start. After only a few months, in discussing physician concern over " 'duplication of medical charity' and its so-called 'abuse,' " he said:

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[17] MMD, "Medical and social cooperation," *Proceedings* of the National Conference of Charities and Correction, 1911, 278-281.

[18] Mrs. Elizabeth Day, interview, Aug. 10, 1968; *BDAR, 1911*, 28.

[19] This statement of the functions of Dispensary social workers is drawn from annual reports, speeches, and articles throughout the period. Staff accounts in *BDAR, 1914*, 52-61, presaged the chapter on "Social Work" in MMD and Andrew R. Warner, *Dispensaries* published in 1918

> We don't know who the patients are. We have no idea what proportion are really entitled to free treatment. We are not agreed what the standard of decision should be . . . We can have no standard until the social worker has been called in, on behalf of the medical institutions, to ascertain the economic and social conditions of their patients; in other words, to make a social picture, a "survey" of what those institutions mean to the community. Such surveys are the only basis on which we can proceed intelligently.[20]

In 1914, one such study showed that in a three month period less than one percent of applicants were rejected because it appeared they had too much income or were entitled to private medical treatment for industrial accidents. Less than half of one percent had been receiving treatment elsewhere. In another study of children admitted to the three major hospitals and the Dispensary the minimal duplication revealed was "a percentage very much smaller than one would be led to expect by the amount of discussion."[21]

In fact, Davis turned the tables by accusing the medical institutions of "abusing" the patients by failing to give them the quality of service they had a right to expect. He was distressed by the absence of the carefully nurtured physician-patient relations of private medical practice. At the Dispensary, a review in 1914 showed that of 403 patients treated in a women's medical clinic during three months, 180, or 45%, paid only one visit to the clinic. "Not all of the work done for these 180 patients was wasted, but most of it was," became shortened in a poster to "WASTED WORK—45%" as Davis campaigned for establishment of a social work follow-up system, such as was already operating in the children's services, which would bring about greater continuity of treatment, and therefore more efficient medical service. In the following year the "wasted effort" had been greatly reduced, with only 6% of cases "lost."[22] Recognition that such new arrangements were valid efforts to enhance the efficiency and effectiveness of the physicians' services was evidenced in the rapid spread of the follow-up services.

Administrative changes and social work staffing and services were essentially facilitative to the central purpose of the Dispensary: "the best medical treatment." Davis never lost sight of this and worked constantly with the medical staff to find ways to enhance medical services. Two examples may be cited. In the area of children's services, not only were new programs instituted and new collaborative arrangements with other institutions worked out, but new and higher standards of professional qualifications and arrangments were introduced. Through "pay clinics" not only was there an extension of service to a previously unreached clientele, but hitherto untried arrangements between dispensaries and physicians proved workable.

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[20] MMD, "Cooperation," *op cit.*, 279-280; "Charity taught me," *Survey Graphic*, Jan. 1948, *37:* 28.

[21] *BDAR, 1914,* 13; 60-61.

[22] *BDAR, 1914,* 22-23; *1915,* 16 (chart), 38-39; MMD interview, April 8, 1970

During more than a century, the Dispensary had never provided in-patient service. However, in 1908, a neighborhood day nursery which was going out of business turned over its well-worn property to the Dispensary for a makeshift infirmary for children. The quarters were old, did not lend themselves to good medical service, and were too far from the main building for good supervision. Still, their acquisition drew attention to the shortage of beds available for children under care of the Dispensary. In 1911, under Davis' leadership, the decision was made to enlarge the Dispensary building to set up a thirty-bed hospital for children. By arranging for the Harvard Medical School to select a chief of staff for both the hospital and the children's out-patient department, the Dispensary was moving to meet two of Flexner's challenges: staff qualified for teaching, and continuity of service.[23] In succeeding years other medical services would move in the same direction.

Small as it was, the hospital served a number of purposes. It assured Dispensary doctors of a place where children in need of immediate care could be admitted while the new hospitals of the Harvard Medical School complex were still on the drawing boards. From the standpoint of medical education, the learning value of diagnosis was enchanced by the opportunity to supervise, or at least observe, the case in hospital treatment. The transition back to out-patient supervision was facilitated, and the Dispensary as a whole benefitted by the availability of the hospital laboratory and other diagnostic equipment.

Other ramifications, some anticipated and some not, were many. Davis' vision of the Dispensary as a teaching institution was furthered. Affilations with both Harvard and Tufts medical schools led to the establishment of teaching and research fellowships jointly sponsored by the Dispensary and the schools. Affiliations evolved with various schools of nursing and social work.[24]

Closer cooperative relations with the medical schools and hospitals led the Dispensary to establish a hospital admission bureau through which hundreds of Dispensary patients were admitted each year to Peter Bent Brigham, Boston City, and other hospitals. This helped timid patients venture into the unknown without the disheartening frustration of being turned away when applying personally; it also promoted the concepts of continuity and effectiveness in the Dispensary medical service, even though the patient would not always be under the care of the same physician. The follow-up programs of the various clinics could thus be extended to hospital services, and studies showed that with adequate social work personnel in well-related, even if not integrated, out-patient and in-patient service, a record of nearly 100% completion of treatment could be achieved.[25]

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[23] *BDAR, 1908,* 15-17; *1911,* 8-10, 17, 24-26; MMD to Minam P. Davis, June 4, July 16, 1911, Feb. 11, 1912. MMD personal files.

[24] *BDAR, 1911,* 9; *1913,* 11; *1915,* 31, *1916,* 15, 23.

While the hospital for children was being planned, Davis visualized other possibilites with the building being staffed around the clock. "We welcome the opportunity thus afforded for afternoon conferences, popular evening lectures, and evening clinics which working people can attend without loss of wages."[26] During the next three years he worked out arrangements with the pediatric staff and with two child-placement agencies to provide an afternoon "well-child clinic" type of service for children in foster care. These "Preventive Clinics" were proclaimed in 1915 by the Chief-of-Staff of the Children's Department as the first of their kind in the country. The great majority of the children required further examination and treatment in other Dispensary clinics. In providing this service the Dispensary emerged as "the family physician for non-medical charitable societies."[27]

The idea of the evening clinics was not unheard of, though few were in existence. An article on venereal disease in the *Boston Medical and Surgical Journal* in October 1911 pointed out that few dispensaries had night classes, and working people "must lose half a day. . . . As a consequence, they resort to quacks or the use of nostrums, they are not cured, but go on spreading the seeds of contagion."[28] The same journal recognized the general problem of ability to pay in an editorial about a proposed medical bureau in New York to certify persons of moderate means for specialist service at reduced rates: "It is the middle class family, with a modest income, that often gets the poorest medical attendance. The rich can afford to pay for the best of expert service. The poor at hospitals and dispensaries obtain the same service free."[29]

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[25] *BDAR, 1913,* 14; *1915,* 30-31, 41; *1916,* 29.

[26] *BDAR, 1911,* 9.

[27] *BDAR, 1915,* 33-34; *1919,* 7.

[28] Prince A. Morrow, "The frequency of venereal disease: a reply to Dr Cabot," *BMSJ,* Oct. 5, 1911, *165:* 520-525.

[29] "Medical service for persons of moderate means," *BMSJ,* Oct. 12, 1910, *165:* 574-575.

If Davis was not already thinking along such lines, these articles certainly would have alerted him. Dispensary admissions data were supporting a similar formulation. However, Davis reasoned, to ask physicians to donate their time to treat employed persons during normal office hours would be an imposition. Furthermore, most employed persons would probably wish to pay something, even if they could not afford regular fees. Hence employed persons served in evening clinics should pay modest fees sufficient to enable the Dispensary to compensate the physician for his time. This formulation became a cornerstone of Davis' career.

He consulted with the staff physicians regarding the need for evening clinics in their specialties, on compensation for physicians, on patient fees, and in general on the proposed break with medical charitable tradition. While there were hints that here, as elsewhere, some people felt he was trying to move too fast, there was sufficient support for a pilot demonstration. But where? Not in tuberculosis, since a positive diagnosis and continuing employment were not compatible. Venereal disease might load the idea with negative connotations so that application to other conditions would be difficult. An eye clinic would suffer neither of these handicaps; it would have many positives: the earning capacity of self-supporting persons might be maintained or enhanced; service usually could be completed in one or two visits; and the physician specialists were deeply concerned by irresponsible, unlicensed practice. It was in this service that the country's first evening pay clinic opened April 29, 1913.

Patient fees were set at $1.00 for the first visit and fifty cents for subsequent visits, considerably more than the nominal fees at the "free" morning clinics. Eyeglasses were provided at slightly above cost. The physicians and oculists were compensated. The statistics for five months, given in the 1913 annual report, showed 337 patients treated, one-third from the suburbs; "working girls earning $6 to $8 a week, men and women supporting families and earning $12 to $20 a week have been typical patients;" the clinic had taken in $4 more than expenses, including payment to the physicians. Case illustrations showed how the clinic had helped ease social and economic problems. Until the war period, more than 80% of the patients were women.[30]

The idea of evening pay clinics had met its first test for viability and social worth. It had yet to prove its general utility. In 1914, genito-urinary and syphillis clinics were opened, thus moving the experiment into the public health field. They immediately began serving more patients than the eye clinic and, because of the length of treatment involved, had far more visits. In 1919, with the addition of a gynecological clinic, more than 1,600 patients made more than 32,000 visits to these evening venereal disease services. Although the free morning clinics continued to serve more patients, the average number of visits per patient was less than half that in the evening. The Dispensary cooperated closely with war-time venereal disease control efforts and its clinic organization was used as a national model for local clinics.[31]

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[30] *BDAR, 1913,* 12, 16-18; *1914-1919,* service statistics.

Still other evening services were established. In 1916, a short-lived dental clinic, set up with the cooperation of the Harvard Dental School, closed due to difficulties in securing staff, supplies, and equipment. A successful service also initiated in 1916 was an ear, nose, and throat clinic.[32] A general medical service was first made available in the fall of 1917 when war was taking away many of the city's general practitioners. The availability of this service for employed persons was made known to employers who stood to lose if their workers could not get medical care when needed.[33]

The dozen words devoted to the idea of evening clinics in the 1911 report had proved to be a proverbial cloud on the horizon. In 1919, more than 36,500 visits to six evening clinics were made by 2,750 patients. The $30,000 in patient fees from the evening clinics represented about 20% of the Dispensary income. Still, under a cost accounting analysis they were not covering the general administrative and building expenses allocated to them.[34]

In 1911, needed contributions to meet Davis' tentative first year budget were estimated at $11,000. Although quiet solicitations raised $6,000, the year-end deficit was still $8,706. Undaunted, Davis pushed ahead and a year later wrote his mother: "In the past two years we have invested $55,000 in building additions, added over $80,000 to our endowment [thanks to a $100,000 legacy] and raised $21,000 for current expenses of which $6,000 was secured the first and $15,000 the second year. This is pretty encouraging."[35]

Throughout the decade both expanding services and war-time inflation made the hope of a balanced budget illusory. Solicitation was increasingly systematic. Vague sentimental appeals based on the Good Samaritan symbol gave way to incisive interpretation, buttressed by tables, charts, and pictures. The number of donors grew from 77 the year before Davis came, to 406 in 1914, and more than 900 in 1915 and 1917; in 1917 $22,373 was raised. Nevertheless the deficits increased to $20,000 in 1916 and $22,000 in 1917. Utilizing the organized team approach common in wartime solicitations, more than $77,000 was raised in 1918, but a joint fund-raising effort in 1919 was less successful and it was necessary to do intensive supplementary solicitation to balance the budget.

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[31] *BDAR, 1914-1919,* service statistics, *1917,* 16-18, *1918,* 6.

[32] *BDAR, 1916,* 25.

[33] *BDAR, 1917,* 4, 16.

[34] *BDAR, 1919,* 16, 17, 20.

[35] *BDAR, 1911,* 34; MMD to Miriam P. Davis, Oct. 5, 1912.

By this time patient fees and payments from other organizations for services rendered had become the major sources of income, with static endowment income decreasingly important. Drastic fluctuations in contributions were a constant source of irritation to a board which would have liked to wave a wand at financial problems but, they had learned, modern medical care was expensive, and funding it was an essential task.[36]

Understanding of these varied developments must take into account the increasing impact of World War I from 1915 on. Supplies of Salvarsan and other drugs were cut off; drugs and other supplies rose in price; by 1917 American participation was felt in many ways. That year's report carried a slogan: "The Fight for Health Is Part of the Fight for Liberty," and the sections bore martial headings. Twenty-seven of the medical staff were in service. The social service director had been loaned to the Red Cross, and when the great Halifax munitions explosion occurred, six of the eight social workers dispatched there by the Red Cross were, or had been, on the Dispensary staff, with more called for. The Dispensary early gave physical examinations and remedial services, especially dental, to prospective inductees. Twenty-one Boston physicians accepted temporary appointments on the staff. The Medical Society of South Boston organized a plan to take up the home visiting work of a district physician who was called into service. Such responses were the envy of some hospital administrators over the country who reported that they had to close whole services in their out-patient departments because they could not get physicians to staff them.[37]

During the influenza epidemic of 1918 the district physicians bore loads six to seven times normal. Evening venereal disease clinics doubled in size with no increase in staff. Studies indicated that shortages of accustomed food supplies, especially for national dishes of various immigrant groups, threatened a nutritional crisis. With the help of prominent dieticians, the Dispensary set up a food clinic for general education as well as to deal with specific dietary problems.[38]

The programmatic developments which have been touched on here were far from haphazard responses to particular stimuli; they represented steps in putting into operation a philosophy of health care which Davis began to define early in his Boston experience and which he continued to elaborate during the decade he was there. This philosophy had three principal components. First, he was convinced that curative services divorced from preventive aspirations were unproductive and wasteful. Second, medical services should be accessible to all people, which meant, under the existing system, that ways had to be found to serve a "middle class" which neither qualified for charitable care nor could afford regular medical fees. Third, the provision of good medical care was not the exclusive responsibility and burden of the medical profession, but required the integrated cooperation of persons from many professional and occupational groups.

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[36] MMD interview, April 6, 1970; *BDAR, 1915,* 6-7, 21, 53, 56, *1916,* 17, 19-22; *1917,* 21-25, *1918,* 2, 12-19; *1919,* 3, 16, 18-19; BD minutes, *passim.*

[37] *Transactions,* American Hospital Association, 1917, 62-63.

[38] *BDAR, 1917,* 11-13, 15, 16; *1918,* 5-6; MMD interview, June 13, 1967, MMD, *Food Supply in Families of Limited Means* (Boston: League for Preventive Service, 1917).

The Children's Preventive Clinic provided "medical examination and continuous health supervision of a group of babies and young children . . . in foster homes." Among the 1531 children attending this clinic over a three year period the "death rate of the babies is much less than half the death rate of babies in Boston as a whole."[39] He used this experience to preach the benefits which would come from universal use of this type of medical supervision.

Similarly illustrative of the preventive emphasis were the food clinic, previously mentioned, which was the outgrowth of studies by "The League for Preventive Service," an inter-agency forerunner of the later Council of Social Agencies; and the venereal disease services. With regard to the latter, Davis, in the 1919 report, remarked: "A clinic becomes an agent not only for treatment, but for the control and prevention of disease and for the education of the community. It is a positive and aggressive force, not merely a passive agent."[40]

Corollary to this public health concept was the proposition that quality medical services should be accessible to all people. In discussing the early success of the evening eye clinic, Davis called for the extension of "competent medical service for the eyes, at prices within the reach of those who . . . have very limited means . . . the majority of the community . . . A single evening eye clinic can meet only a fraction of this public need." Otherwise, poor persons would be the victims of charlatans, since "*there is no law which provides any restriction or supervision to prevent totally untrained persons from selling glasses of any quality over the counter.*"[41]

The Children's Preventive Clinic gave another opportunity for positive interpretation.

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[39] *BDAR, 1919*, 8.

[40] *BDAR, 1919*, 9-12.

[41] *BDAR, 1913*, 16-18; italics in original.

> Probably not more than ten percent of the community could afford such service as is rendered in this clinic to a few children. The pediatrician is now available only to the well-to-do in their own homes, and to the poor in charitable clinics. To the middle classes he is available only in cases of great need or emergency, when illness is desperate and the life of the child hangs in the balance. Expert pediatric service ought to be made available to all children, yet cannot be except when organized on some institutional basis, whereby the middle classes, paying moderate fees, may have access to it to serve and promote the health of children instead of merely at rare intervals for the prevention of impending death.[42]

Davis started his work at the Dispensary by separating the administrative and the medical responsibilities. He focussed all available administrative resources, including plant and housekeeping as well as nursing and social work, on support for the fullest success of the medical work. He promoted positive relations with medical schools, hospitals and medical societies. He promoted joint projects with community agencies which would give more scope to the medical work. He publicized Dispensary developments widely, and took pride in the quantity and quality of scientific and professional papers produced by the staff. As the medical staff recognized that their interests were being promoted, even if in unorthodox ways, they accepted a closer relationship than before with their co-workers in the Dispensary. In 1916 a joint council, representing the medical staff, the Board of Managers, and the administrative staff, including social work and nursing, was established to consider matters of mutual concern.[43] This came just in time to help the Dispensary weather the trying period of war. It typified the cooperative relationships between professions which Davis visualized as essential to successful service in the health field.

As Davis was preparing his annual report for 1919, he was being invited by the Rockefeller Foundation to apply his ideas in a larger setting. Thus the report became at once a valedictory and an action program. Looking ahead, he said:

> A larger share of the burden of caring for the destitute may rightly be expected to be borne in the future by public rather than private agencies: but a larger, not a lessened, responsibility must rest upon the private agency . . . for the maintenance and advancement of standards; for developing fuller and more effective community relationships . . . in social work; and above all for extending the benefits of modern medical and health service to an increasing proportion of the community. A high grade of medical care in illness, advice of specialists and systematic service for the promotion

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[42] *BDAR, 1919*, 9.

[43] *BDAR, 1916*, 2, 26. Steps leading to the formation of the Council were indicated in *1911*, 9-10; *1913*, 10; *1915*, 19, 27.

of health must be made available to all people—the middle classes as well as the poor and the rich. In all times, medical care of the poor has been seen as a necessary charity. In the present time, we are beginning to see that the cure and prevention of disease is an essential public service.[44]

Half a century later, Ray Brown, Administrator of Medical Services, Harvard Medical School, put this aspect of Davis' work in perspective: "Michael Davis was probably the first person in this country to recognize that the road to further advance in health would be in the organization and delivery of services, rather than in medical science itself."[45]

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[44] *BDAR, 1919,* 13-14.

[45] Ray Brown interview, Aug. 7, 1968.

"CHRISTIAN PHYSIOLOGY": WILLIAM ALCOTT'S PRESCRIPTION FOR THE MILLENIUM*

JAMES C. WHORTON

> The moralist who is not a physiologist can only demonstrate the reward of virtue in another world.
>
> St. Simon[1]

As the banquet climaxing the First Annual Meeting of the American Vegetarian Society passed from the moulded farina course to the dessert of fruits and nuts, Society president Dr. William Andrus Alcott (1798-1859) rose to propose a cold water toast. "A Vegetable Diet," he proclaimed, "lies at the basis of all Reform, whether Civil, Social, Moral, or Religious."[2] Had there been any dietary heretics in the hall, the response might have been offered that such native sentiments as Alcott's lay at the basis of much, if not all, of the ridicule already heaped upon him and his comrades in the mid-nineteenth century health reform campaign. Certainly their uncritical expectations for the measureless benefits of hygiene invited the labels of faddist and crackpot so liberally applied to the health reformers in their own days and since. Yet by siding with nature against art in the great therapeutic debate; by urging the superiority of prevention to cure; by directing attention to the hygienic hazards of industrial civilization; and by proposing that physical circumstances shape individual morality, the health reformers were active contributors to the formation of a social conscience for American medicine. Their fundamental ideas were, admittedly, commonplace in the progressive thought of the Jacksonian period, but a measure of originality was achieved by their arrangement of these ideas in such a way as to transform individual hygiene into a moral-social crusade. Previous studies of the movement have suggested as much, by indicating that health reform's uniqueness derived from its invigoration of aged hygienic precepts with the passion of evangelism.[3]

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* This is an expanded version of a paper presented at the 47th annual meeting of the American Association for the History of Medicine, Charleston, S.C., May 2, 1974.

[1] Quoted by F. Manuel, *The New World of Henri Saint-Simon* (Cambridge: Harvard Univ. Press, 1956), p. 135.

[2] *American Vegetarian*, 1850-1851, *1:* 25.

[3] The best treatments of the health reform movement are: R. Shyrock, "Sylvester Graham and the Popular Health Movement, 1830-1870," in *Medicine in America, Historical Essays* (Baltimore: Johns Hopkins Univ.

BULLETIN OF THE HISTORY OF MEDICINE 49 466-481 (1975)

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Nevertheless, a detailed exposition of the movement's ideology has not been presented.

For the purposes of initiating such an analysis, examination of the work of William Alcott should prove most fruitful. His was the most vigorous voice and prolific pen in health reform, and his the richest vision of the means and ends of hygiene. When he toasted his fellow vegetarians in 1850, Dr. Alcott was tailoring his words to fit the occasion. What he fully believed was that all reform must come from physiology, a discipline of which vegetable diet was but a part—a discipline, for that matter, of which "physiology," in the ordinary usage of the term, was but a part. Alcott was the advocate of what might be described as "Christian Physiology," a directing of biological science toward the social goals of contemporary revivalism, a placement of physiology as the cornerstone of the earthly Kingdom.[4]

To an extent, such a union of science and religion was symptomatic of the times. Doctors of divinity and of physick alike had long agreed that natural laws, including those of physiology, were of divine institution. Similarly, the marvelously intricate machinery of the human frame was widely regarded as demonstrative evidence of a Great Designer. Particularly in Alcott's America there existed an almost self-conscious eagerness to present scientific knowledge as a supplement to religious truth.[5] What was distinctive about Christian Physiology was the assumption that the books of revelation and of nature, coming from the hand of the same Author, must be mutually reinforcing, and that in particular natural law cannot possibly be immoral. Thus the truths of religion might be relied upon to resolve questions of science: when faced with alternative explanations, the scientist might confidently conclude the moral

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Press, 1966), pp. 111-125; H. E Hoff and J. Fulton, "The centenary of the first American Physiological Society founded at Boston by William A. Alcott and Sylvester Graham," *Bull Hist. Med.*, 1937, *5* · 687-734; W. B. Walker, "The Health Reform Movement in the United States, 1830-1870," doctoral dissertation, John Hopkins, 1955; S W. Nissenbaum, "Careful Love. Sylvester Graham and the Emergence of Victorian Sexual Theory in America, 1830-1840," doctoral dissertation, University of Wisconsin, 1968; J. Blake, "Health Reform," in E. Gaustad (ed.), *The Rise of Adventism* (New York: Harper and Row, 1974).

[4] The Rosenbergs' article, "Pietism and the origins of the American public health movement: a note on John H. Griscom and Robert M Hartley," *J. Hist. Med.*, 1968, *23* 16-35, proposes that early sanitary reform was not simply a reaction against an unbearably filthy environment, but more significantly a positive expression of religious commitments. Similarly, health reform, particularly as developed by Alcott, was less an announcement of disgust with the present crudities of personal hygiene than a promise of sanctification through reformed hygiene. Griscom and Hartley expected an exalted morality as a consequence of general environmental improvement; Alcott expected it to result from individual hygienic improvement.

[5] These relations between science and theology are discussed in G H Daniels, *American Science in the Age of Jackson* (New York: Columbia Univ. Press, 1968), p. 51 f. Alcott's acceptance of the popular attitudes is revealed by his recommendation of Paley's *Natural Theology* as the first book to be read by young couples educating themselves in physiology: *The Young Wife* (Boston, 1838), p. 314.

one to be the true one.[6] Viewed in this light, the hygienic extremism of health reformers appears not as an enthusiasts' overreaction to gluttony and inebriety, but rather as a code of hygienic law derived through "scientific" reasoning. The branding of flesh-eating, dram-sipping, and other indulgences as anti-physiological is simply an announcement that physiology, as the handiwork of God, must be Christian.

I

Toward the end of his life, Alcott anonymously claimed credit for having "probably attempted to guide a greater number of erring young men during the last half century than any living individual in this country."[7] Had he added "young women," "children," and "older people" to the boast he would not have been far wrong. In the heyday of the "how to live" manual, Alcott was the most productive of authors, dutifully turning out more than one hundred volumes of didactic books and journals.[8] Nevertheless, he arrived at his formula for human happiness more by accident than design, having to be persuaded, in 1816, to assume the post of district schoolmaster.[9] In the Spartan, stultifying environment of the Connecticut schoolhouse, Alcott's enlightenment began. Gradually recognizing that the physical and pedagogical arrangements of traditional education encouraged boredom, discomfort, even illness in students, he came by the early 1830s to be a prominent participant in America's great educational awakening, acting both as an innovative teacher and critic, and as an editorial assistant of William Channing Woodbridge, the earliest popularizer of Pestalozzi in this country. In Pestalozzian education, with its emphases on the cultivation of reasoning power above memory, on the management of children with friendly understanding rather than rigid discipline, and particularly on the harmonious development of all the individual's faculties, the physical and moral as well as intellectual, Alcott found something more than a revolutionary method for instructing the young. The new education, used to impart an understanding of the structure and functioning of the human body and a reverence for the full realization of human potentialities, was to be an essential element in his strategy of hygienic reform.

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[6] Such a dictation of science by Christianity was not so explicitly stated by health reformers, but their tacit acceptance of the idea is strongly suggested by the fact that those hygienic habits recommended as beneficial are invariably in accord with Christian ethics, and by the contrived physiological explanations offered to account for the physical injuriousness of immoral practices. Consider, for example, Sylvester Graham's analysis of the physical dangers of masturbation and fornication, discussed by Nissembaum *op. cit.* (n.3 above), p. 175 f. Also see, for Graham's understanding of the relation of physiology to Christianity, his *Lectures on the Science of Human Life* (Boston, 1839), vol. 1, pp. 425-9.) The role of moral considerations in the formulation of a physiological rationale for vegetarianism will be explored in another paper by the author. Evidences of similar reasoning by Alcott will appear above.

[7] Alcott, *The Physiology of Marriage* (New York: Arno Press, 1972), p. vi. This is a reprint of the 1866 edition; the original edition of the book was in 1855.

[8] Barnard's *American Journal of Education*, 1857, *4:* 655-656, has a nearly complete bibliography, appended to the lengthiest biography of Alcott (pp. 629-654). Other biographical studies include H. Thoms, "William Andrus Alcott: Physician, educator, writer," *Bull. Soc. Med. Hist. Chicago*, 1928, *4.* 123-130, and L. Salomon, "The Least-Remembered Alcott," *New England Q.*, 1961, *24:* 87-93: and C. Rosenberg, introduction to Alcott's *The Physiology of Marriage* (n. 7 above) The richest source of biographical information is Alcott's own books and journals.

[9] His career as an educator is detailed in Barnard's *Journal*, and in Alcott's *Confessions of a School Master*, (Reading, Pa., 1856). The accidental nature of his entry into this career is recounted on p. 15 of *Confessions*.

That proper hygiene, in turn, was essential to effective education, was also a dominant theme of Alcott's early writings.[10] Over-heated, under-ventilated schoolhouses dulled children's minds while damaging their bodies, and could be nearly as injurious for the schoolmaster himself. A physical decline brought on by his teaching duties had in fact already compelled him to take up the study and practice of medicine as a means of self-preservation, though to no avail. In an unintentionally wry observation on the quality of medical education in his day, Alcott noted that, "a course of medical lectures which I heard in 1825-6 [at Yale], left me . . . in about as bad a state of health as school keeping formerly had done."[11] Not even the drugs in the materia medica presented in those lectures (that "wilderness of pills and powders," as he later denounced it) could halt his downward trend. Only by a declaration of "medical independence," an affirmation that medicines only aggravate and prolong illness, that nature is the best doctor, and that illness can be prevented by correct living habits, was Alcott able to pull himself back from the edge of the grave.[12] His rejection of all medicines and all stimulating food and drink restored him to vigor and equipped him physically and mentally to carry out his new life work: physical education.

[10] See especially his *Prize Essay on the Construction of School Houses* (Boston, 1831), a work recognized as the best on its subject by the American Institute of Instruction in 1831 It was in fact Alcott's concern for scholastic hygiene which drew him into association with Woodbridge. In their conversation, Alcott recalled, Woodbridge "inquired what, in my view, was the capital error in American education 'This cultivation,' said I, 'of the intellect, at the expense of the health and morals.' The reply bound us together, as friends and fellow-laborers, forever " *Lectures on Life and Health; or, the Laws and Means of Physical Culture* (Boston, 1853), p. 273.

[11] *Forty Years in the Wilderness of Pills and Powders, or, the Cogitations and Confessions of an Aged Physician* (Boston, 1859), p. 72.

[12] *Ibid.*, p. 72 f , has a typically melodramatic account of Alcott's renunciation of standard medical practice

> What a mighty work for this fallen world education has yet to achieve; especially Physical Education! This . . . let me say once for all, this physical education, under the guidance of Christianity, whose handmaid all true science should be, and to whose development and application all true religion should be directed, is our chief dependence. It is the lever by which we are to raise the world.[13]

Neither before nor since has the term physical education comprehended quite so broad a field of concerns as in Alcott's understanding; nor has its promise seemed so great. Its power of salvation stemmed, as Alcott's definition indicates, from his Christian Physiology, from its insistence on the moral duties and benefits inherent in physiology and the significance of these for the advancement of Christian society. The moral implications of physiology, Alcott submitted, carried far beyond the truisms that the body, as temple of the soul, should be preserved pure and whole, and that the study of physiology, by inspiring admiration of the Creator, inclined one to piety. The complete implications pointed not just toward God, but to all humanity; they offered not just a guarantee against atheism, but a hope for a positively Christian world.

The morals of physiology could be deduced from the premises that the human body is subject to natural laws, that these laws are discoverable, and that they indicate certain hygienic practices as essential to the proper functioning of the body. Regarded as the dictates of God, physiological laws could thus promote a quasi-Hebraic epidemiology which threatened illness and early death as punishment for violation of the divine laws of health, and promised patriarchal longevity as the reward for obedience.[14]

But physical health alone was not the goal of hygienic rectitude. "It is no part of our intention," Alcott explained,

> to diffuse light on the structure, functions and relations of man, as the ultimate *end* of our labors; but rather as a *means* to an end. Moral or spiritual advancement has been the chief end to which our eye has been directed, and still is. To make men more healthy and long-lived, without making them any wiser or better, what good purpose could it possibly answer? It would do little if anything more than to make them the more gigantic, if not the more mischievous animals.[15]

Bodily strength would be evil unless accompanied by spiritual strength, but fortunately the natural laws of health had the same Author as the laws of morality; the two codes could not conflict, and must indeed cooperate. By a divinely wrought sympathy, healthy bodies produced healthy consciences (and vice-versa). Denying indulgence to the physical appetites restored the soul's dominion over the flesh, reestablished the individual's control of those passions which could lead astray.[16]

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[13] *Ibid.*, p. 132.

[14] *Library of Health*, 1839, *3*. 105; 1842, *6*. 9-10.

[15] *Teacher of Health*, 1843, *1*: 9.

One had several obligations to seek this moral improvement. The duty to God was clear and overriding, but there were responsibilities as well to one's family, to contemporaries, and to posterity. The provision of food, shelter and clothing for his dependents demanded robustness of the husband. The education of children and management of the household required a similar vigor of the wife. And, in an era of such ambitious benevolence, unflagging strength was needed by all to serve humanity. Finally, as the acquired physical and mental constitutions of parents were assumed to be transmitted to offspring, the health and virtue of subsequent generations depended upon the present one's observance of physiological laws.

Americans, of course, were so mired in their dissipations that the conversion of his generation to the gospel of hygiene would be a heroic labor. But Alcott, while professing humility, clearly saw himself as equal to the task. What else is one to make of his repeated references to himself as a medical missionary, of his claim of having spent forty years in the medical wilderness, or of his account of literally going up on a mountain to have the laws of health revealed to him?[17] Even when not in his prophetic frame of mind, Alcott was ecstatic about physiology. "In the present blaze of physiological light," he once exulted, "we can, in ways and processes almost innumerable, manufacture human health to an extent not formerly dreamed of."[18] For the dream to be realized, however, physiological knowledge had to be publicized. The science had not yet been productive of human good because it had been "locked up in the dead languages of the medical man's library."[19] An interpreter was needed, someone with at least a physician's understanding of physiology and an educator's ability to simplify complex ideas: someone like Alcott. To be of true value to mankind, moreover, interpretation could not be limited to popularization of the latest research, but would have to be given practical expression by the derivation of hygienic principles from physiological laws. Alcott naturally assumed that physiology had predictive power, that its facts uncovered by observation implied still other facts to be found through reason. Considering his zeal for compiling a Christian code of hygiene, it is not surprising that his physiological logic often led him to present as substantiated theory what was only plausible hypothesis, and even implausible speculation. Thus the fact that dead animals putrefy more rapidly than dead vegetables undeniably meant that vegetable food produces "purer solids and fluids," and accounted for the observation that vegetarians "possess a suppleness like that of youth, even long after what is called the juvenile period of life is passed over. They are often seen running and jumping, unless restrained by the arbitrary customs of society, even in advanced age."[20] Contemporary understanding of heredity, to offer another example of Alcott's tendencies of interpretation, indicated that the child inherits the acquired constitution of its parents, and therefore parents should not only maintain their bodies at the peak of proper hygiene, but should also engage in sexual intercourse early in the day, while still fresh and fully invigorated. The fundamental error of child propagation, he warned, was the saving of sex for the evening, after the body had been enfeebled by the other exertions of the day.[21]

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[16] Alcott's complete understanding of the morality of physiology is scattered throughout his writings, for relatively concise discussions, see *Library of Health*, 1838, *2:* 270, and *ibid* , 1842, *6:* 265 f. Perhaps the best presentation of the subject is Elisha Bartlett, *Obedience to the Laws of Health, a Moral Duty* (Boston, 1838).

[17] *Forty Years*, p 75.

[18] *Lectures on Life*, p. 32.

[19] *Ibid.*, p. 43. That Alcott read the latest publications in physiology is evident from his numerous references to figures such as Beaumont, Boussingault and Liebig That he understood all he read is less certain, in his 1853 *Lectures on Life and Health*, for example, he was still pointing to the lungs as the site of heat production in the human body (p 175).

Such absurdly rigid hygienic deductions as these were countered in Alcott's, and other health reform, writings, by exceedingly lax analyses of empirical hygienic evidence. In a word, subjective evaluation was rampant. Alcott's publications teemed with examples of men who lived to remarkable years because of their vegetable diet and/or abstinence from alcohol and other drugs; almost as numerous were the reminders that any meat eaters and whiskey drinkers who survived to old age did so in spite of their habits, borrowing time on strong inherited constitutions. And, Alcott actually took William Beaumont to task for the implication that animal foods are more easily digested than vegetable, dismissing the error with the comment, "I am sorry to detect Dr. B. in mistakes so great; but we must remember his errors in this particular were on the side of his inclination."[22]

Alcott's own inclination, of course, permitted a strong moral influence to enter his physiological reasonings, evident, for instance, in his pronouncements that novels are more injurious to the eyes than are other books, or that masturbation is far the most damaging form of sexual indulgence.[23] Yet if morality informed physiology, the reverse was also a rule. Hence the vegetable diet, clearly preferable to flesh eating on moral grounds, was not to be adopted unless shown to be at least as nourishing as meat.[24] Not surprisingly, the physiological evidence was overwhelmingly in favor of vegetarianism. Physiology might even improve on scriptural morality: Christ drank wine, but, Alcott assured the public, had he had the benefit of modern physiological knowledge, he would have drunk only water.[25]

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[20] *Vegetable Diet as Sanctioned by Medical Men and by Experience in All Ages* (Boston, 1838), p. 232.

[21] *The Physiology of Marriage*, p. 128 f.

[22] *American Vegetarian*, 1854, *4:* 74.

[23] *Library of Health*, 1842, *6:* 58-59; *Physiology of Marriage*, p. 68

Alcott's contemporaries had the benefit of this knowledge—what they lacked was Christ's capacity for self-denial. Nor did many want the latter. The rejection of all the supposed good things of life in obedience to an uncompromising hygienic duty seemed a form of "physical puritanism," as at least one critic characterized health reform,[26] and the greatest obstacle to the advance of the movement was the inability of the public to comprehend that abstinence did not necessitate misery. In trying to remove this prejudice, Alcott devoted many pages to the discussion of the human appetites,[27] always beginning his analysis with a denunciation of the ascetic notion that passions are shameful and therefore to be suppressed. As natural accompaniments to life, the physical appetites must be good. What are evil are depraved appetites, those made voracious and uncontrollable by repeated indulgence. And depravity is evil not simply because it leads the individual into immoral behavior, but also because it prevents him from experiencing that ultimate sensual gratification that controlled appetites afford. The self-indulger is in fact double deluded, for he is mistaken in thinking that the quantity of excess outweighs the quality of temperance, and unaware that present dissipation erodes the capacity for continued future enjoyment. The individual must therefore be enlightened by physiology, and his appetites trained to full strength by hygiene. Then he would learn, as Alcott had, that simply prepared vegetables gave the greatest gustatory satisfaction, that pure water alone could truly quench a thirst, and that sexual congress was best limited to once a month, since "the pleasures of love, no less than the strength of the orgasm, are enhanced by their infrequency."[28]

Alcott may have employed an unusual calculus of pleasure to evaluate the joys of the flesh, but he hardly disdained them. The epithet of physical puritanism, therefore, was inappropriate, and because it distorted the religious as well as the physical aspects of his doctrine. As was observed of more than one New Englander maturing in the religious ferment of the early 1800s, Alcott's nerves were still Calvinistic, but his heart was Unitarian; he was made uneasy by passion, but hoped for physical satisfaction as an earthly reward.[29] He shared the revivalists' interdenominational faith in the perfectability, indeed sanctifiability, of man, and their anticipation of the approaching millenium. On the issue of millenial strategy, Alcott sided with those who scorned a miraculous imposition of deity in favor of a Kingdom won through human effort. Just as disease was no arbitrary act of providence, but could be avoided by the observance of divinely ordained physiological laws, so perfect health could be achieved by the obedient exploitation of those laws. Further, in emphasizing the contribution of a healthy, beautiful body to Christian conduct, Alcott effectively made hygienic obedience prerequisite to moral progress. Had he been a man of lighter humor, he might easily have proposed that "pretty does as pretty is." That cultivation of the physical nature in accord with Christian Physiology would renovate society, he had no doubt. In one of his typically optimistic announcements, he asserted that properly educated physical appetites "are a means of lifting us toward the Eden whence we came."[30]

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[24] *Vegetable Diet*, p. 165. Alcott joined other vegetarians in condemning the slaughter of animals for food as immoral, because it created *unnecessary* suffering. But where the welfare of humanity was at risk, animals might be sacrificed without remorse. He repeatedly called for the destruction of dogs for hygienic and economic reasons (*Moral Reformer*, 1835, *1*: 35, 231; *Library of Health*, 1841, *5*: 130, *American Vegetarian*, 1852, *2*: 127).

[25] *American Vegetarian*, 1852, *2*: 9. Alcott was also convinced that Christian ministers needed a thorough knowledge of physiology to properly understand the scriptures (*Moral Reformer*, 1836, *2*: 64)

[26] *American Vegetarian*, 1852, *2*. 88.

[27] See, for example, *Teacher of Health*, 1843, *1*: 265-267; *Physiology of Marriage*, p 17 f.; *Lectures on Life and Health*, p. 315 f, *The Laws of Health: or, Sequel to "The House I Live In"* (Boston, 1859), p 186 f.

[28] *The Physiology of Marriage*, p. 119.

II

Restoration of the human race to Eden was a goal common to the host of Jacksonian reformers, though each had mapped his own special route to the Garden. Physiology, furthermore, had lent a hand in the elaboration of more than one of these schemes. Particularly in the development of the French "positive" view of social evolution, early nineteenth century physiology had been hailed as the culmination of the growth of physical science and the entering wedge for a science of human behavior and hence of society.[31] Since the resultant sociology would provide a blueprint for the restructuring of present unscientific social conventions and institutions, physiology had revolutionary implications. The Fourierists who threw up so many Phalanxes around the American countryside during Alcott's time were specially concerned to reorder society to accommodate man's natural physical passions.

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[29] Paraphrase of a comment by Mary Mann, *Life of Horace Mann* (Boston, 1888), p. vii. Alcott's religious views pervade all his writings; see particularly the references of note 13 above, and *Lectures on Life and Health*, p 24 f ; and *The Young Husband* (Boston, 1846), p. 115 f. Valuable discussions of revivalism during Alcott's period are W. R. Cross, *The Burned-Over District. The Social and Intellectual History of Enthusiastic Religion in Western New York, 1800-1850* (Ithaca: Cornell Univ Press, 1950); T. L. Smith, *Revivalism and Social Reform in Mid-Nineteenth Century America* (New York: Abington, 1957), and H R Niebuhr, *The Kingdom of God in America* (Hamden, Conn.: Shoestring Press, 1956).

[30] *The Laws of Health*, p. 187

[31] Manuel, *The New World of Henri Saint-Simon*, is an especially insightful demonstration of the significance of physiology in early nineteenth century social thought.

To Alcott, this was physiology misdirected; it struck at the fruit of injustice rather than the root. Seeing that men create their social environment, and that human nature must be elevated before institutions can be perfected, Alcott would have agreed with part-time Brook Farm resident George William Curtis, that "the love which alone can make your Phalanx beautiful, also renders it unnecessary."[32] In his own wordier way, he did agree, ending a commentary on the principles of Fourier and Owen, Sr., with the remonstrance.

> Our main objection to these new modes of reform is, that it is hardly worth while to multiply associations. God has, from the first established two, the *family* and the *church;* or the smaller and larger *community*. . . . Let all our energies be concentrated on the *two churches,* the *lesser* and the *greater,* and the day which Fourier and others so much desire—the glad day of our redemption—is at hand. The so much distrusted, so much sneered at institutions of Jehovah will then be found fully adequate to accomplish their purposes.[33]

Coming from a man who considered himself an "ultra," this appears perhaps the stodgiest of reforms, but it of course presupposed the regeneration of the family and the church by a hygienically exalted human nature. And the purging of institutional corruption with the regeneration promised allowed Christian physiology to encompass competing social reform movements.

Alcott thus spoke regularly against the enslavement of the African race,[34] against the domestic enslavement of women,[35] and against the economic enslavement of laborers.[36]

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[32] G. W Cooke (ed.), *Early Letters of George William Curtis to John S Dwight* (New York, 1898), pp. 155-156

[33] *Teacher of Health,* 1843, *1* 104. Alcott's enthusiasm for reform nevertheless led him to flirt with the idea of cooperating with the Fourierists (Shyrock, *op cit* , n. 3 above, p 119).

[34] For examples, see *Moral Reformer,* 1835, *1.* 77; *Library of Health,* 1837, *1:* 160-162, *ibid* , 1840, *4* 345-346

[35] Representative discussions of female rights may be found in *Moral Reformer,* 1836, *2* 212-215; *Library of Health,* 1837, *1.* 380-382, *The Young Husband,* p 339 f While wanting to free women from "the din of pots and kettles," Alcott was not so radical as to recommend the liberation of wives from their appropriate sphere of the home and their appropriate role as helpmeets (*The Young Wife,* pp. 359-360). He concurred in the general opinion that woman was physically inferior to but spiritually nobler than man.

[36] *Moral Reformer,* 1835, *1.* 91; the ten-hour day was supported in *ibid* , p. 335, and *Library of Health,* 1842, *6* 168, speculation in land was denounced in *Moral Reformer,* 1835, *1* 317, and *ibid* , 1836, *2* 139. Alcott frequently addressed the subject of factory hygiene: *Library of Health,* 1837, *1*· 308 f., 370 f., *ibid.,* 1842, *6* 63-65; *Lectures on Life and Health,* p. 282.

> Yet I have witnessed other forms of slavery among us, whose effects are to me still more shocking; . . . I allude of course to the slavery of bad physical habits; the slavery of a being made originally in the image of God, but now very generally subjected to appetite, lust and passion.[37]

Until this slavery was abolished, all other reforms would be futile, and once it was abolished, other reforms would be needless. Men renovated by Christian physiology would not want to own other men, oppress women, or work their employees long hours in dirty factories for starvation wages. Socially, Alcott's utopia was a composite of Jacksonian ideals.

Its chief virtue, however, was contributed by the Health reform movement specifically: the truly Christian society would be a *hygienic* millenium. There was scriptural authority for such a hope—had not Isaiah, as Alcott repeatedly noted, foretold the day when "the child shall die a hundred years old?" Now, in the nineteenth century, there was physiological evidence of the physical perfectibility of man. Explaining how the human body is composed of invisibly small particles, and how these are constantly being changed as old ones are worn away and new ones from the food and atmosphere replace them, Alcott proposed that people dedicate themselves to a metabolic purification of their bodies.

> If our food, and by consequence our chyle and blood, are as good as they can be made; if the air we breathe is as pure as it should be; if all our organs and functions are duly and properly (but not excessively) exercised; if, in one word, we obey all the laws of life from first to last, and disobey none of them, what . . . is to hinder an organ, naturally imperfect [from heredity and abuse], from becoming, in process of time, comparatively perfect? But if the individual, in view of the perpetual renovation of his system, can do much for its improvement, in his own little life time, how much can be done in a series of generations for the improvement and elevation of the human race?[38]

Alcott left the question rhetorical in this article, but answered it fully in his other works. How much physical improvement might there be? Certainly specimens of physical beauty unrivalled since Adam and Eve should become ordinary.[39] The total eradication of disease might also be anticipated, for "how could a person in perfect health, and obeying, to an iota, all the laws of health—how could he contract disease? What would there be in his system which could furnish a nidus for its reception?"[40] The life span should be greatly lengthened, and not simply because of the negative influence of the absence of disease, but more significantly because of the positive factor of hygienically improved body structure and functioning. Antediluvian longevity was Alcott's expectation, and he could "see no reason why life may not be lengthened . . . to several hundred years, and the value of each year be doubled or tripled."[41] The final clause was added to forestall the objection that several centuries of old age would be more a burden than a blessing. In the first place, by improving either his "infantile particles" or his "octagenarian particles,"[42] a person would be much more vigorous at any age. Secondly, the replacement of the present artifically stimulated "hot-house" development of the body by a natural hygienic maturing should so retard the rate of growth that a person "may be thirty, or fifty, or a hundred years, in attaining to maturity."[43]

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[37] *Library of Health,* 1837, *1* 160.

[38] *Library of Health,* 1839, *3:* 95

[39] *The Young Husband,* p. 27.

[40] *Vegetable Diet,* pp. 242-243.

The "hot-house" that, in the meantime, was aging men prematurely was, in the broadest sense, civilization. Like so many of his contemporaries, Alcott distrusted the rapid changes accompanying industrialization. He lamented the passing of the rural economy because it had necessitated the living of a relatively hygienic life.[44] The unnatural, confined employments of urban society forced people to violate the laws of health in order to make a living. Industrialism diverted mind and energy into a degrading and debilitating competition for money, while churning out products that further alienated man from nature.[45] The awesome technology of transportation was most frightening:

> Once we travelled in the open air; but now we are hardly willing to do that. If we are so vulgar as to walk, we must be well-protected with gloves, and umbrellas, and veils. . . . The greater part, however, travel in steamboats, canal boats, or railroad cars; which last are always closed, and sometimes heated. What will be the contrivance for shelter, when we come to ride midway between the earth and the sun, in balloons, or on electro-magnetic wires, it remains for human ingenuity to determine.[46]

Alcott was nevertheless at pains not to be misinterpreted as a spokesman for noble savagery. If hygienically managed and used for the production of physiological necessities instead of luxuries, industry would improve the human condition yet still allow a return to nature;

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[41] *Gift Book for Young Men, or Familiar Letters on Self-Knowledge, Self-Education, Female Society, Marriage, etc* (New York, 1856), p 17.

[42] *The Laws of Health,* p. 17.

[43] *Ibid.*, p 2 Even Alcott's physiological zeal had limits, however, and he balked at physical immortality. Rather, he supposed "a definite quantity of oil is furnished to nature's lamp, and, when that is exhausted, life will, of course, be extinguished" (*ibid.*, p. 18). All hygiene could accomplish was to minimize the rate of combustion of vitality.

[44] *Lectures on Life and Health,* pp. 280-281.

[45] *Library of Health,* 1841, *5:* 82; *ibid.*, 1837, *1.* 43; *Moral Reformer,* 1836, *2:* 37 f.

[46] *Lectures on Life and Health,* p. 147.

> or, to express the idea more exactly, a gradual ascent to nature. Man's nature is intended, most certainly, to include art, and to be affected and modified by science. But in making our ascent up the mount whence we have fallen, it is by no means necessary that we should return to barbarism.[47]

What Alcott envisioned, though only vaguely, was a Christian civilization, a society combining the moral and physical vigor of Biblical days with the scientific knowledge of the modern era.

He further unquestioningly assumed that when such a society did emerge, it would be in the United States. America's democratic government and social newness, its freedom from entrenched rank and privilege, had made this nation the favorite for experimenting utopians, but Alcott's plans, while taking full cognizance of the opportunity for social improvement here,[48] placed even greater emphasis on the patriotic duty to accomplish this improvement. He personally struggled to declare his independence from drugs and stimulating food and drink on the Fourth of July, and was disappointed not to be able to escape this bondage until July 5.[49] Thereafter, he missed no opportunity to inveigh against the "unrepublican" tendencies of gluttony,[50] and to exhort his young countrymen to see to it that

> The United States, possessing the most ample means of instruction within the reach of nearly all her citizens, the happiest government, the healthiest of climates, the greatest abundance of the best and most wholesome nutriment, with every other possible means for developing all the powers of human nature, be peopled with the most vigorous, powerful, and happy race of human beings which the world has ever known.[51]

III

But even in America the millenium would not be achieved quickly. In a hopeful moment in his later years, Alcott thought he could "already . . . behold the dawn . . . of the perfect day."[52] but ordinarily he recognized that degraded human nature would need generations, probably centuries, to recover its physical glory.[53] Interestingly, no group would be more vital in this piecemeal elevation of humanity to a state of complete freedom from illness than would physicians; and if their involvement in the work seemed professionally self-destructive, it was only because the proper role of physicians was not yet understood, either by the public or by the doctors themselves. Medical men, Alcott insisted, must be trained and employed to prevent, rather than cure, disease.

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[47] *Ibid*., p. 226.

[48] *Gift Book for Young Men*, p 49.

[49] *Forty Years in the Wilderness*, pp. 72-73.

[50] *Moral Reformer*, 1835, *1*· 22, *ibid*., 1836, *2*. 368-369.

[51] *The Young Man's Guide*, p. 33

[52] *American Vegetarian*, 1851, *1*· 45.

[53] *Gift Book for Young Men*, p. 132, *The Laws of Health*, p. 18

Laymen habituated to curative medicine, whether regular, irregular, or quack, could not appreciate the better use of physicians until made cognizant of the laws of health and their implications for the prevention of disease. This awareness was to be instilled by early physiological education in the common school, a project to which Alcott dedicated a major portion of his energy throughout life, and for which he was rewarded by the 1850 law requiring physical education in Massachusetts.[54] Yet even in this period of such pronounced medical populism, and for a man so thoroughly democratic as Alcott, physiological education was not intended to make every man his own hygienist. Physiology was not so simple a science as to be mastered by all, and common school instruction should be directed simply toward creating a consciousness of the possibility of preventing illness and thereby generating a public demand for a new kind of service from physicians.[55]

Physicians, after all, could not be expected to reform themselves. The traditional system of paying doctors in proportion to the amount of sickness in society discouraged concern for preventive medicine, Alcott argued in his more cynical moods. And though some medical writers had recommended the employment of doctors in a preventive role, such men of foresight were still so few that the Boston physician Edward Jarvis was justified in complaining in the mid-1840s that "our education has made our calling exclusively a curative . . . one, and . . . with health, with fullness of unalloyed, unimpaired life, we professionally have nothing to do."[56] But, the optimistic Alcott reasoned, if medical education were reoriented toward physiology, and the public made eager to pay for expert advice on disease prevention and health promotion, the physician could assume his intended office as a missionary, a bringer of bodily salvation.[57]

As ever, religious analogy directed Alcott's thinking, but his program had a solid temporal basis as well. Assuming a missionary of health to contract with one hundred families, at twenty dollars per family, to provide medical care for a year,

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[54] This law is reprinted in L. Shattuck, *Report of the Sanitary Commission of Massachusetts* (Cambridge: Harvard Univ. Press, 1948), p. 178 Horace Mann was quite active in the movement for elementary physical education: see his *Annual Reports on Education* (Boston, 1868), the Report for 1842

[55] *Lectures on Life and Health*, p. 475; *Library of Health*, 1840, *4* 212-213.

[56] Quoted by W. G Smillie, *Public Health, Its Promise for the Future A Chronicle of the development of Public Health in the United States, 1607-1914* (New York. Macmillan, 1955), p 232. Alcott's concept of the physician as disease preventer was presented as early as his presidential address at the founding of the American Physiological Society in 1837 (*The Graham Journal of Health and-Longevity*, 1837, *1*: 111).

[57] *Lectures on Life and Health*, pp 452, 473-474, *Forty Years in the Wilderness*, p. 101; *Library of Health*, 1837, *1* 189

> is it not obvious that, having made such an engagement, it would be for his pecuniary advantage to do all in his power to keep my family in health? . . . If by four quarterly visits, and judicious instruction as to the best means of promoting and preserving health, the physician can prevent disease at all, he will get his twenty dollars comparatively easy. But if, by his neglect, some of the family get sick, and he is obliged to make one or two hundred visits in the course of the year, his case will be a sad one indeed. Against this, however, self-interest, you may depend upon it, will lead him to look out in the best manner possible.[58]

The best manner possible, Alcott detailed elsewhere, would be "to patch up" the sick and injured and allow nature to accomplish recovery; to persuade people to stop prescribing medicine for themselves; to teach everywhere, in homes, schools, factories, even jails, the laws of health and their practical application; and finally, to periodically perform careful and complete "physiological examinations" of the patients in his charge to detect any hygienic errors before serious damage could result.[59]

The last function posited a continuing need of physicians, for even in the millenium corporeal temptation would exist and physiological backsliding be possible. Eternal vigilance would be necessary to preserve the best of earthly lives, but it would not be sufficient. The vigor of the new society would, in fact, flow less from the elimination of illness than from the creation of health, the unceasing promotion of ever greater vitality by capitalization on the laws of physiology.

> Now the application of christianity to the redemption of the body is attended with the same difficulties which have always attended its application to the redemption of soul and spirit. People in general—physicians often among the rest—are satisfied with the no-harm doctrine. . . . The only question asked, as a general fact, is—"Will it hurt us?" . . . We must rise to something positive. Is this air, this dress, this cleanliness, this sleep, this food, this drink—in quantity and quality—the *best* for me and those around me, as well as for those who are to come after me—the best for my physical, my intellectual, my social, my moral and my religious good? . . . These, briefly, are my views.[60]

They were views which in their emphases on disease prevention and health production were strikingly precocious, and while the twentieth-century reader will consider the addition of religous content to physiology an obstruction or an affectation, the relationship seemed a genuine one to Alcott's contemporaries. His views were extreme, but that was hardly unusual. It was normal in New England to "do good by mania,"[61] and Alcott's had the advantage over other reforms of supporting the religious, social and political status quo. It erred, of course, in so thoroughly denouncing the physiological status quo, in demanding that complete renovation of the individual which a religious interpretation of physiology required. It underestimated the hold of the depraved appetite. Alcott was fond of modestly comparing himself to Biblical prophets and missionaries, and would no doubt be comforted by the suggestion that his apparent failure to regenerate humanity was like that of the Saviour: "For the gate is narrow and the way is hard, the leads to life, and those who find it are few." Or, as the more moderate and realistic hygienist Robley Dunglison observed of health reform at its beginning, "Unnecessary self-privation and rigour will gain few proselytes, and so far defeat the praise-worthy intentions of many of their founders."[62]

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[58] *The Young Husband*, p. 373.

[59] *Lectures on Life and Health*, p. 444 f.

[60] *Library of Health*, 1839, *3:* 37.

Alcott's program of physical and moral purification could only be viewed by the many as "unnecessary self-privation," and he indeed gained few proselytes. Yet he did not admit defeat. He had not expected the millenium to arrive soon or without setbacks, and his very last published words, concluding a call to greater efforts in the cause of hygiene, were that "truth, in truthful hands, has nothing to fear."[63] He seems to have had no fear that his vision of the future would not be fulfilled, and thus the poem dedicated to him by a young vegetarian in 1852 must have seemed a vindication of his life as hygienic prophet and encouraged him to think that the work of the future was well begun. It certainly captured the spirit of Christian Physiology:

> Who is it that around does go,
>   The Vegetarian seed to sow,
> And teach to man his health to know?
>   Dr. Alcott. . . .
>
> From North to South, from East to West,
>   Who teaches man no more to feast,
> On fish or reptile, bird or beast?
>   Dr. Alcott. . . .
> Who shows that in the cause of right,
>   Legions have no need to fight,
> By conquering self we gain the might?
>   Dr. Alcott.[64]

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[61] Harriet Martineau, *Society in America* (Gloucester, Mass., 1968), pp. 319-320, reported overhearing the comment that "the people of New England do good by mania."

[62] R. Dunglison, *On the Influence of Atmosphere and Locality, . . on Human Health, Constituting Elements of Hygiene* (Philadelphia, 1835), p. 352.

[63] *Forty Years in the Wilderness*, p. 379.

[64] *American Vegetarian*, 1852, *2:* 79

SUSPENDED ANIMATION AND THE HISTORY OF ANESTHESIA

LLOYD G. STEVENSON

Suspended animation, or apparent death, is the theme of a large literature. It attracted attention in antiquity; methods of distinguishing real from apparent death were of such widespread interest in the eighteenth and nineteenth centuries that a textbook on the subject which was published in 1890 had a bibliography containing no fewer than 418 references.[1]

This development, which reached a new peak in the nineteenth century, was a curious parallel to an important change in quite another area of medicine. From 1846 onward, anesthetics were rendering patients "dead to the world"—unconscious and free from pain—and in course of time this wonderful innovation also gave rise to a flood of publications.

One connection between these two literatures is obvious: the anesthetists rapidly became, and have remained, the great resuscitators. Was there any other connection of importance—any connection extending to the time before the anesthetist *per se* existed? Is there any reason to assume a definite historic relation between these two themes?

The introduction of anesthesia is a subject which has occasioned much spilling of ink. The story can be told in outline very briefly.[2]

The great pioneer of what was called "pneumatic chemistry," Joseph Priestley, was one of the originators, if not the prime source, of the idea of employing various newly discovered gases as therapeutic agents in medicine. The most zealous of many proponents of this "pneumatic medicine," which even extended its interest to the vapor of sulphuric ether, was Dr. Thomas Beddoes, with whom was associated for several years a brilliant young experimenter, formerly a surgeon's apprentice, named Humphry Davy. Davy it was who made extensive trials of the effects of inhaling nitrous oxide, one of the gases discovered by Priestley, and who noted, in rather casual fashion, that this gas might "be used with advantage during

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[1] Felix Gannal, *Mort apparente et mort réele moyens de les distinguer* (Paris, 1868; 2nd. ed. 1890).

[2] A two-volume compilation of the basic literature, *Foundations of Anesthesiology* (Springfield: Thomas, 1965) was edited by Albert Faulconer, Jr. and Thomas E. Keys. Keys is also the author of *A History of Surgical Anesthesia* (New York: Schuman's, 1945; rev. ed., Dover, 1963). Of many other histories, the best is still Barbara M. Duncum, *The Development of Inhalation Anesthesia* (London: Oxford, 1947). Cf. [Garrison and Morton] *A Medical Bibliography*, 3rd. ed. (Philadelphia and Toronto: Lippincott, 1970), pp. 659 ff.

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surgical operations in which no great effusion of blood takes place," in order to prevent pain.[3]

Although pursued with enthusiasm and diligence, "pneumatic medicine" disappointed the high hopes of Beddoes and others in the treatment of consumptions, asthmas, palsies and the many other diseases for which inhalations seemed at first to promise so much. Davy gave up the work to follow his other, more strictly scientific, interests, and neither he nor anyone else paid any further attention to his suggestion, since famous, that nitrous oxide might prevent the pain of operations. What chiefly impressed the popular mind in regard to nitrous oxide was the euphoria reported by those who had breathed it: Robert Southey was said to have declared "the atmosphere of the highest of all possible heavens to be composed of this gas." "Laughing gas" parties and public demonstrations of nitrous oxide led in course of time to repetitions of Davy's original observation that it was capable of preventing physical pain. The discerning eyes of Horace Wells, a New England dentist who attended one of these demonstrations, saw the significance of this property of the gas and in 1844 he made use of it in a painless tooth-extraction. Unfortunate circumstances attended his effort to demonstrate its value to the surgeons of Boston, but his failure was soon followed, on October 16, 1846, by the celebrated success of another dentist, William Thomas Green Morton, who triumphantly employed sulphuric ether in an operation carried out by Dr. John Collins Warren at the Massachusetts General Hospital. Whether the idea of using ether originated with Morton himself, inspired by the partial failure of Wells and seeking a better drug, or with his teacher, colleague and rival, the chemist, Charles T. Jackson, it is likely that it owed its origin to the observation of accidental painless injury in the course of an "ether frolic," for ether, like nitrous oxide, had been used for purposes of amusement. This was at any rate the origin of the successful experiments in the employment of ether for minor surgical procedures in the hands of Dr. Crawford W. Long, the Georgian who anticipated Morton by about four years, having started the same work independently in 1842. Professor James Young Simpson of Edinburgh introduced chloroform anesthesia into practice in November 1847.[4]

An interesting suggestion—which might be a part of this standard story of anesthesia and might on the other hand be a part of the somewhat broader story involving Hickman, and in one way or another all the prophets of suspended animation—had been put in the form of a question, in the winter of 1815-16, by Benjamin Rush, lecturing in Philadelphia: "Might we not induce coma to a low degree of apoplexy in order to bear long operations and parturition well?" This question is quoted by James E. Eckenhoff, apparently from a manuscript volume of notes dated 1817, in which it is recorded that Rush at some point (not necessarily in the same lecture) spoke about ether given by way of the lungs. In this context, of course, the question seems to mean that Rush was anticipating Morton, or thinking it over at least; but "coma to a low degree of apoplexy" could mean something quite different from etherization, and the means to be used to induce coma are not, so far as the quoted matter reveals, clearly stated. Was Rush talking about ether here—it seems a little improbable—or was he using the word "coma" in a much broader sense, according to its usual acceptation? The point might be worth pursuing.[5]

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[3] T. Beddoes and J. Watt, *Considerations on the Medicinal Use of Factitious Airs* (Bristol, 1796) H. Davy, *Researches, Chemical and Philosophical, chiefly concerning Nitrous Oxide* (London, 1800).

[4] The whole of this paragraph is based on the general histories of anesthesia, particulary Keys, *op. cit.* (n 2 above) and Duncum, *op. cit.* (n 2 above)

On February 8, 1847, Dr. Thomas Dudley wrote a letter to *The Lancet*, followed by a second letter in March, in which he put forward a claim on behalf of Dr. Henry Hill Hickman (1800-1830) as the discoverer of inhalation anesthesia, but it was not until 1930, on the centenary of Hickman's death, that the claim received serious attention. The Section of Anaesthetics of the Royal Society of Medicine then placed a tablet in Bromfield Church "as a Centenary tribute to the memory of the earliest known pioneer of Anaesthesia by Inhalation," and the Wellcome Historical Medical Museum published the relevant documents in full.[6] I propose to begin my account of suspended animation by briefly examining Hickman's work.

With a view to bringing his experiments to the attention of the Royal Society, Hickman addressed a letter, dated February 21st, 1824, to Mr. T. A. Knight, of Downtar Castle, near Ludlow, a country gentleman and something of a botanist, who had been elected F.R.S. in 1805.

> Dear Sir,
>
> The object of the operating surgeon is generally considered to be the relief of his patient by cutting some portion of the human body whereby parts are severed from each other altogether or relieving Cavities of the aggravating cause of disease. There is not an individual who does not shudder at the idea of an operation, however skilful the surgeon or urgent the case, knowing the great pain that the patient must endure, and I have frequently lamented, when performing my own duties as a Surgeon[,] that

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[5] James E. Eckenhoff, *Anesthesia from Colonial Times. A History of Anesthesia at the University of Pennsylvania* (Philadelphia: Lippincott, 1956), p 16.

[6] [Hickman] *Souvenir. Henry Hill Hickman Centenary Exhibition, 1830-1930, at the Wellcome Historical Medical Museum* (London: The Wellcome Foundation, 1930).

something has not been thought of whereby the fears may be tranquilised and suffering relieved. Above all, from the many experiments on suspended Animation I have wondered that some hint has not been thrown out, of its probable utility, and noticed by Surgeons, and, consequently, I have been induced to make experiments on Animals, endeavouring to ascertain the practicability of such treatment on the human subject, and by particular attention to each individual experiment, I have witnessed results which show that it may be applied to the animal world, and ultimately I think will be found used with perfect safety and success in Surgical operations. I have never known a case of a person dying after inhaling Carbonic Acid Gas, if proper means were taken to restore the animal powers, and I have no hesitation in saying that suspended animation may be continued a sufficient time for any surgical operation providing the Surgeon acts with skill and promptitude; and I think it would be found particularly advisable in Cases where hemorrhage would be dangerous or the Surgeon is apprehensive of Gangrene taking place after the operation, as it is well known that carbon has a most powerful antiputrescent quality. It will be found, if the means of suspending animation are slow and gradual, the return of the powers of life will be in that same proportion; if the means of suspension are sudden, it generally happens by the application of certain agents that the return of life is equally so; and I think it very probable, if the Galvanic Fluid could have been applied in Cases that have proved fatal, the persons may have been saved—From a number of others I have selected the experiments now sent; each is correctly noted in as few words as possible, which I think will prove a vast object. With great respect

I am Dr. Sir Your Obt. St.

(signed) H. H. Hickman[7]

Appended to this letter were very brief accounts (three or four sentences each) of seven experiments on small animals—dog, cat, rabbit and mouse—in which suspended animation was brought about by various means, all of them delivering carbon dioxide, or, as Hickman called it, carbonic acid gas. Not greatly different from the others is experiment no. 5:

> I took an adult dog and exposed him to carbonic acid Gas quickly prepared and in large quantity; life appeared to be extinct in about 12 seconds. Animation was suspended for 17 minutes, allowing respiration occasionally to intervene by the application of inflating instruments. I amputated a leg without the slightest appearance of pain to the animal. There was no hemorrhage from the smaller vessels. The ligature that secured the main Artery came away on the fourth day and the dog recovered without expressing any material uneasiness.[8]

This experiment differed in two ways from the others. It allowed "respiration occasionally to intervene by the application of inflating instruments," and it lasted considerably longer.

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[7] *Ibid.*, pp. 23, 25.

[8] *Ibid.*, p. 27

In the same year (1824) Hickman published at Ironbridge his now famous pamphlet, *A Letter on Suspended Animation,* which was reprinted in 1930. "The experiments were necessarily made," confesses the author, "upon living animals, but they were confined to animals previously condemned to death; and as their lives were preserved and their sufferings very slight, (certainly not so great as they would have sustained if their lives had been taken away by any of the ordinary methods of killing such animals) I venture to hope that they, in the aggregate, rather received benefit than injury." Short notations of six of the same, or very similar, experiments follow.

> I feel perfectly satisfied that any surgical operation might be performed with quite as much safety upon a subject in an insensible state as in a sensible state, and that a patient might be kept with perfect safety long enough in an insensible state for the performance of the most tedious operation. . . . There are . . . many cases in which it would be important to prevent any considerable hemorrhage. . . . I have reason to believe that no injurious consequence would follow if the necessity of the case should call for more than one suspension of animation. . . . I am not, at present, aware of any source of danger to a patient, from an operation performed during a state of insensibility, which would not operate to the same extent upon a patient in full possession of his powers of suffering, particularly if he were rendered insensible by being simply subjected to respire confined air. I used inflating instruments in one experiment only, and therefore am not prepared to say to what extent such may be used with advantage; but I think it probable that those and the Galvanic fluid would operate in restoring animation in some cases. I was prepared to employ the Galvanic fluid if any case had occurred to render the operation of any stimulant necessary, but all the subjects recovered by being simply exposed to the open air; and I feel so confident that animation in the human subject could be safely suspended by proper means, carefully employed, that, (although I could not conscientiously recommend a patient to risk his life in the experiments) I certainly should not hesitate a moment to become the subject of it, if I were under the necessity of suffering any long or severe operation.[9]

Hickman has been quoted at some length for the purpose of commenting on half a dozen points. For the moment, however, I shall confine myself to one. This is obviously a desperate business: Hickman is by no means unaware of the danger of the course he proposes, but the horror of preanesthetic surgery is urging him on. Let me remind you of another proposal for obtunding pain, a proposal little less desperate, that of bleeding the patient to the point of syncope, put forward in Britain five years earlier, in 1819, by an experienced and intelligent surgeon, James Wardrop.[10] We must not be misled, however, by Hickman's assurance, in his published letter, that "a patient might be kept with perfect safety long enough in an insensible state for the performance of the most tedious operation." If what he had in mind was asphyxia—and to this point I shall have to return—the statement was no doubt over sanguine. Yet in his first letter to Knight he had put the matter a little differently: he had said that "suspended animation may be continued a sufficient time for any surgical operation, providing the Surgeon acts with skill and promptitude." Perhaps we should recollect, at this point, the lightning speed with which Cheselden performed lithotomy, and the statement made about Robert Liston, who was to perform the first major operation under ether in the British Isles, that when he amputated, "the gleam of his knife was followed so instantaneously by the sound of sawing as to make the two actions appear almost simultaneous." The whole procedure took twenty-five seconds.[11] These men were among the speed kings of surgery, but the most tedious operation attempted would seldom have lasted longer than the seventeen minutes which Hickman's experience authorized him to consider as possible.

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[9] *Ibid.*, pp. 34-35.

[10] James Wardrop, "Some observations on a mode of performing operations on irritable patients, with a case where the practice was successfully employed," *Medico-Chirurgical Transactions*, 1819, pt. 2, art. 18, pp. 273-277. This journal, published by the (Royal, after 1835) Medical and Chirurgical Society of London,

The most thoughtful study of Hickman's work is that contained in F. F. Cartwright's book on *The English Pioneers of Anaesthesia.* Cartwright insists that "suspended animation" was a technical term which cannot be regarded, as D. W. Buxton regarded it, as the early nineteenth-century term for anesthesia. Obviously not. But Cartwright's definition, although essentially correct and illuminating as regards the work of Hickman, is unduly narrow. "Hickman was using a perfectly ordinary term in its correct contemporary sense; suspended animation simply meant asphyxia, and is so used in eighteenth and early nineteenth century medical literature."[12] It is

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appeared regularly from 1809 to 1907 when it merged with other journals to form the *Proceedings of the Royal Society of Medicine.* (See W R Lefanu, "British periodicals of medicine," *Bull. Hist. Med.,* 1937, *5* 9, and 1938, *6* 65) The operation was for the removal of a tumor from the face and "no less than fifty ounces of blood were drawn before she fainted." He declared, "it has not been my intention to recommend this mode of practice for general adoption" but in urgent circumstances "it may be ventured upon fearlessly." Cf. "Lectures on surgery delivered by Mr. Wardrop On surgical operations," *Lancet,* 1833, *ii* 597. Cf also William P Dewees, *An Essay on the Means of Lessening Pain and Facilitating Certain Cases of Difficult Parturition* (Philadelphia, 1806), pp. 62-63 (on blood-letting): "This remedy is by no means a new one, in labor, but employed for the purpose of diminishing pain, and subduing the various species of rigidity . . ., originated, as far as I am acquainted, with myself." Cf. Peter Miller, *An Essay on the Means of Lessening the Pains of Parturition* (Philadelphia, 1804).

[11] *Plarr's Lives of the Fellows of the Royal College of Surgeons of England* (London, 1930) vol. 1, p. 720. Cf. Owen H Wangensteen, "The surgical amphitheatre, history of its origins, functions, and fate," *Surgery,* 1975, *77:* 403-404.

[12] F. F. Cartwright, *The English Pioneers of Anaesthesia* (Beddoes, Davy, and Hickman) (Bristol: Wright; London: Simkin, 1952), p 302

no doubt likely, from the means he employed, that Hickman used the term in this sense, though even for him it must have had additional connotations. Buxton's statement that "Hickman primarily sought anaesthesia" is meaningless with reference to any distinction between anesthesia and asphyxia.[13] Etherization was later explained as an asphyxial phenomenon, and it was necessary, as Barbara Duncum has pointed out, for Flourens in France and Snow in England to distinguish between the two states.[14] Even so, the effort by Ozanam in 1856 and 1857 to introduce carbon dioxide as the anesthetic of choice, based on the theory that all anesthetic agents break down into carbon dioxide anyway, was clearly predicated on the underlying belief that anesthesia and asphyxia were identical. "We already know," he wrote, "the anaesthetic properties of carbon dioxide gas: the arrest of bleeding, paralysis of the nervous system, all the phenomena of insensibility to the point of apparent and then actual death."[15] How should Hickman have conceived of something more than, or different from, asphyxia? That carbon dioxide has been shown in recent times to have properties which we, in the twentieth century, may describe as anesthetic properties[16] is altogether irrelevant, historically speaking, and by the same token it is a matter of secondary interest that Hickman, in the fortunate circumstances of the experiment I have cited in full, may actually have induced what would now be described as anesthesia, or the anesthetic state. It goes without saying that all of these considerations hinge on the definition of the word "anesthesia" itself; but since we use this word daily to mean something relatively clear and precise, we should not adopt another meaning for historical purposes, except insofar as we can make clear to ourselves any differences that may have existed in the past in its actual employment. To foist a word he did not know on Hickman, whether we attach to it his concepts or our own, will not be helpful. But if we choose to say, with Hickman's greatest admirers, that he "discovered" anesthesia, the statement is not devoid of meaning. Columbus discovered America but thought he had penetrated to the Orient. The important difference is this: that America when once discovered by

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[13] Dudley Wilmot Buxton, Foreward, Hickman, *Souvenir* (n. 6 above) p. 17. The sentence immediately before the quoted statement is this: "Anaesthesia was no doubt his aim, but he knew being a surgeon, that the obvious way of obtaining stupor was by asphyxia; at the same time, he also recognised that asphyxia was the handmaiden of death, a peril, not an assistance, to the work of the surgeon."

[14] Duncum, *op. cit.* (n. 2 above), p. 160.

[15] *Ibid* , p. 223. Ozanam's experiments (*C. R. Acad. Sci.*, Paris, 1856, *43* 1187-8; 1857, *45* 348; *46:* 417-20) were conducted on rabbits and were essentially the same as Hickman's.

[16] C. D. Leake and R. M. Water, "Anesthetic properties of carbon dioxide," *Anesth. & Analg* . Jan.-Feb. 1929, *8:* 17-19.

Columbus was never mislaid again. If the grown dog of Hickman's fifth experiment was anesthetized and not asphyxiated, then Hickman was the far-wandering Leif Ericson of our history of anesthesia. Probably the best candidate for the role of Christopher Columbus is W. T. G. Morton.

I said a moment ago that Cartwright's definition of suspended animation as nothing more or less than asphyxia was unduly narrow. This was merely the commonest of a host of possible meanings, in medical as well as in popular literature. In the first volume of the first series of the *Index Catalogue*, published in 1880, and comprehending a vast range of the literature of medicine, old and new, the heading *suspended animation* is supplied with eight cross references. These include not only *apnoea, asphyxia, drowning* and *artificial respiration,* but also *syncope, trance, catalepsy* and *apparent death.* The list of synonyms or near equivalents is incomplete, unless *apparent death* may be taken to cover all omissions. At the briefest reckoning, *lethargy, lipothymy, stupor, sopor, torpor,* even *swoon* or *fainting,* and, above all, *coma* ought to be included, as well as *ecstasy* and *hypnosis. Dormition,* like *sleep* itself, could mean simply sleep but could also mean death or a death-like state. Ploucquet has lengthy entries under *lipothymia* and *debilitas* but also, and more importantly, under *mors putatitia,* and with this heading appear *isaeothanatos* and *pseudothanatos.*[17] *Hibernation, aestivation, encystment, vita minima* and the other terms or concepts related to these should also find a place in the list. There are, besides, a number of other expressions which may be summarized under the comparatively modern heading, *hypothermia.* Even *desiccation* ought not to be left out. Every one of these terms (with the possible exception of *dormition*) held a place in medical literature and every one of them signified, sometimes at least, a form of suspended animation. Possibly it would be nearer the truth to say that "suspended animation" was a portmanteau expression which at one time or another conveyed one or more of these varied concepts, or the whole kit together. Some of the terms (e.g., *pseudothanatos*) are merely the verbal equivalents of "apparent death" or quasi death, but some were intended to convey special meanings of their own. These special meanings were often vague. It is no wonder, then, that a convenient, all-inclusive label was used again and again as a sort of general-delivery tag. This label was "suspended animation."[18]

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[17] W. G. Ploucquet, *Initia bibliothecae medico-practicae et chirurgicae,* 8 v. (Tubingae, 1793-97). t.V (1795) pp. 685-693, and *idem. Bibliotheca medico-practica et chirurgica realis recentior,* 4 v. (Tubingae, 1799-1803), t. II (1800) pp. 200-207 Ecstatic or rapturous states might be abstractions of various degrees. Temkin has pointed out that "it was possible to make the term epilepsy so comprehensive as to include nearly all trance-like states." Owsei Temkin, *The Falling Sickness: A History of Epilepsy from the Greeks to the Beginnings of Modern Neurology,* (2nd ed., Baltimore: Johns Hopkins Press, 1971) p. 159. Cf. *ibid.,* p. 160, for an account of epilepsy, syncope, and divine rapture as brought together in the Neo-Platonic philosophy of Agrippa of Nettesheim. Cf. also the whole section on "Epilepsy and Prophetic Trance," *ibid.,* pp. 154-161. That a philosopher, not suspected of illness, might, under the influence of Saturn, escape from outward stimuli and even from his own body *(atque corpore proprio sevocatus)* was indicated very clearly by Marsilius Ficinus. Raymond Klibansky, Erwin Panofsky, and Fritz Saxl, *Saturn and Melancholy* (London: Nelson 1964), pp 259-260 and f.n. 56

No doubt the most surprising of all these many terms to a modern eye is the word "ecstasy," which means the state of being "beside oneself." Nowadays, to be "beside oneself" means to be frantic—usually from anger, fear, pain or bewilderment, rather than from pleasure—whereas ecstasy means intense or rapturous delight, less commonly mystical absorption.

According to the *New English Dictionary:*

> The classical senses of ecstasis are 'insanity' and 'bewilderment', but in late Greek the etymological meaning received another application, viz., 'withdrawal of the Soul from the body, mystic or prophetic trance', hence in later medical writers the word is used for trance, etc., generally. Both the classical and post-classical senses came into the modern languages, and in the present figurative uses they seem to be blended. . . . By early writers [the word was] applied vaguely, or with conflicting attempts at precise definition to all morbid states characterized by unconsciousness, as swoon, trance, catalepsy, etc.

In John Donne's *Ignatius His Conclave,* the soul of the narrator "had liberty to wander through all places,"[19] and descended into hell to listen to the disputations of Ignatius, Paracelsus, Copernicus and Machiavelli. During a very long oration by Ignatius, this gypsy soul became uneasy. "I began to think of my body which I had so long abandoned, least it should putrifie, or grow mouldy, or bee buried. . . ."[20] When at last he went back to his body he found it restored like a flower of the morning, warmed with the new sun, for it was then "with this returne of my soule sufficiently refreshed."[21] Donne's famous anthology poem, "Ecstasy," points to the concept of Platonic love, simultaneous states of ecstasy permitting the union of two souls.

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[18] According to Webster, "Lethargy connotes drowsiness or apathy, Torpor is stronger, and suggests extreme sluggishness or suspended animation; Stupor denotes heaviness and deadening of the faculties, amounting even to complete unconsciousness," but the terms are not always mutually exclusive and the first definition of lethargy is "morbid drowsiness; continued or profound sleep." It was sometimes supposed to be profound enough to last for years, even for centuries

[19] *Ignatius His Conclave: or His Inthronisation in a late Election in Hell* . . (London, 1611), p. 2 (reproduced in facsimile from the edition of 1611 with an Introduction by Charles M. Coffin, Facsimile Text Society, New York, 1941).

[20] *Ibid.*, p. 90.

[21] *Ibid.*, p. 143

The legend of the long sleep (often better called lethargy than suspended animation) occurs widely in ancient myths and in a variety of civilizations. The Nine Sleepers of Sardinia are more than rivalled by the Seven Sleepers of Ephesus, for the seven are more widely known. They were said to have been Christian youths in a time of persecution (under the emperor Decius) who were walled up in a cave for some two hundred years before they awoke and went out for food. The story goes that a church was erected above their cave by Theodosius. A church dedicated to the Seven Sleepers was built at Rome, on the Appian Way, and several in Germany. Marseilles and other cities boasted of possessing their relics. Muhammadans also venerated the Seven Sleepers. Endymion, whose perpetual sleep may have been a reward and may have been a punishment, did much of his sleeping in the cool caves of Latmus, "the mount of oblivion." Epimenedes (? 6th Century B.C.), the fabulous poet and prophet of Crete, was sent when a boy to fetch sheep, and sought shelter from the midday sun in a cave where he remained asleep for fifty-seven years. Talmudic tradition has preserved similar legends. Of Onias (Ḥoni), teacher and miracle worker of the first century B.C., it is said that he went to sleep at the time of the destruction of the First Temple and did not awake until after the building of the Second Temple. God caused Abimelech to sleep for 66 years, to spare him the sight of the destruction of the Temple.[22]

Marathon sleepers in modern times have been subjected to medical surveillance and consequently doze on in the pages of medical literature, as for example, in *A Relation of an Extraordinary Sleepy Person at Tinsbury, near Bath,* about the end of the seventeenth century, where he was carefully studied by Dr. William Oliver.[23]

So far as we know, all such extraordinary sleepy persons as were visible continued to breathe visibly, and so were not taken for dead. From Edymion to Rip van Winkle, they were simply sunk in profound slumber, and the chief medical question seems to have been to find out how nutrition was kept up.[24] The Seven Sleepers were, in a sense, entombed, but by and large the lethargic were not those who were said to be buried alive.

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[22] Most of this paragraph is drawn from I Guidi's article in *Encyclopaedia of Religion and Ethics,* vol. XI (New York, 1921), pp. 428-430. Apparently the most comprehensive account, with the largest survey of parallel legends, is found in Michael Huber, *Die Wanderlegende von Siebenschlafern* (Leipzig. Harrassowits, 1910) Guidi questions Huber's hypotheses and conclusions.

[23] William Oliver, *A Practical Dissertation on Bath Waters . . . to which is added a Relation . . .* (London, 1707), pp. 113-136. Oliver's *Relation* was brought to my notice by Dr. Stephen Good.

[24] I am unable to name Endymion's doctor, nor Rip van Winkle's, but Galen in antiquity, William Oliver and many others in the eighteenth century and since, have worried about this problem.

The danger of premature burial has haunted the mind of man for centuries. "Such is the condition of humanity," wrote Pliny, "and so uncertain is men's judgment, that they cannot determine even death itself." It was in the context of his account of such difficulties that Celsus put forward his modest suggestion that "the art of medicine is conjectural."[25] Medical writers admitted that ascertaining death was sometimes difficult. Apnoea might be deceptive. There was a famous story, attributed to Heraclides of Pontus and commented on by Galen, of a woman who remained without respiration or pulse for thirty days, and who differed in no respect, says Galen, from the dead, but by the single circumstance of having a little warmth about the heart.[26] This woman, a fine example of suspended animation, was afflicted with hysteric, or uterine, suffocation, said to be due to a rising of the womb. Galen wrote extensively on the soporantes—on *coma* and *coma vigil,* on *carus, cataphora* and *catalepsy,* and on determining the signs of death. One of his predecessors among the Greek physicians of Rome, Asclepiades of Prusa, had taken his first step in reputation by stopping a funeral cortege and resuscitating the supposed corpse.[27] All things considered, death was not the easiest of diagnoses, and precautions were therefore taken to prevent untimely burial or cremation. Had not Zeus discharged his lightning at Asclepius for restoring the dead to life?

A thousand tales might be gathered together—hundreds may be found in grisly Victorian anthologies—of the unfortunate victims of haste, incompetence or callousness who were buried deep while yet alive.[28] Duns Scotus, the famous Franciscan theologian, is said to have been one. How many are the stories of the body found just inside the door of the sepulchre, grave clothes rent and knuckles broken, or face down in a sealed coffin, with contorted limbs and both hands full of hair. A favorite theme of the gothic romances—"The Fall of the House of Usher" is a familiar example—it had long been a serious, nay a solemn, topic among those of light and leading. Its literature, already vast in the eighteenth century, seems to have grown apace after 1800.

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[25] Celsus, *De medicina,* with an English translation by W. G. Spencer, II.6.16 (Loeb Classical Library, 1960, vol. 1, p. 115).

[26] Galeni *De locis affectis,* VII.5 (Kühn, VIII: 415 ff.).

[27] Pliny, *Natural History,* with an English translation by W. H. S. Jones, VII.37.124; XXVI.8.15 (Loeb Classical Library, 1942, vol. 2, p. 589; 1956, vol. 7, p 277). Cf. also Celsus, *op. cit.* (n. 25 above), II.6.15 (vol. 1, p. 115).

[28] William Tebb and Edward Perry Vollum, *Premature Burial and How it may be Prevented, with Special Reference to Trance, Catalepsy and other Forms of Suspended Animation* (London, 1896; 2nd ed. 1905); Gannal, *op. cit.* (n. 1 above).

Early in the nineteenth century mortuaries, constantly supervised, appeared in various European cities, so that the dead might be watched—for signs of returning life or for signs of putrefaction. This development has been chronicled by the *British and Foreign Medico-Chirurgical Review:*

> The earliest movements in the direction of means for the prevention of premature interments originated with Winslow in France, followed by other well-known writers upon the signs of death. It was Madame Necker, however, who embodied their suggestions in a practicable form as submitted to the National Assembly in 1792 . . . In the ninth year of the first French Republic (1801) a project was entertained for the erection of six 'temples funeraires' in Paris, but came to no good, as attendant evils preponderated. To Germany belongs the credit of having executed these designs in such wise that they should not prove the positive sources of more danger in the living than could be counter-balanced by the occasional preservation of an individual from the risk of premature interment. Believing that this risk had been prodigiously diminished since the establishment of these institutions for the reception of cases where doubt of the reality of death had existed, Hufeland, in Weimar, devised the plan that Frankfort-on-the-Main incorporated with its reform in sepulture and establishment of extra-mural cemetries in 1823. Hufeland's plans have subsequently been adopted and carried out in many other German States.[29]

Britain seems to have been rather laggard in setting up such mortuaries. It was as late as 1847 that Robert Brandon called for a new institution in London, to be called DUBIAE VITAE REFUGIUM; or ASYLUM FOR DOUBTFUL LIFE.[30]

Meanwhile a new business sprang up—equipping graves not only with ventilating systems but also with speaking tubes and signalling apparatus (strident bells, flashing lights and easily agitated flags) in order that the not-quite-dead and not-quite-buried might make their wishes known. The finest achievement of ingenuity was a hair-triggered ejection seat, since adapted to higher purposes. In 1852 George Bateson took out a patent for the Bateson Life Revival Device, popularly known as "Bateson's belfry," consisting of an iron bell mounted on the lid of the casket and connected by a cord or wire through the coffin to the dead person's hand, "such that the least tremor shall directly sound the alarum." Such was his belfry that Bateson was soon a wealthy man; and in 1859 Queen Victoria awarded him an O.B.E. His apparatus was supposed, of course, to show what it could do before interment actually took place; it was a device of a preventive kind.[31]

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[29] *British and Foreign Medico-Chirurgical Review,* 1855, *15.* 75. Cf. Suzanne Necker, *Les Inhumations précipitées* (Paris, 1790).

[30] Robert Brandon, "On the construction of houses for the reception of the dead; and on the means to be used for the recovery of those who are only in trances or fits, or in whom life is only impasive," *Medical Times,* 1847, *16:* 574. Brandon recommends all the usual methods of resuscitation but puts the greatest trust in hot baths. "Many may be recovered by transfusion (first introduced into this country by the celebrated Dr. Blundel) when the heart still palpates, but the brain is insensible "

All of this had, indeed, its brighter, though by no means cheerful aspect. More numerous, perhaps, than the tragic stories of premature burial, were the near-tragic stories of living death prevented. My particular favorite is the anecdote of an Indian missionary named Schwartz, who was wakened from the trance of death by hearing his favorite hymn sung over him at his funeral. "His resuscitation was made known," so say Messrs. Tebb and Vollum, authors of a well-known work on premature burial, "by his joining in the verse."[32]

This anecdote has something in common with an older one, dating from the sixteenth century and recounted in Winslow's popular work of the eighteenth. "In the year 1571, the Wife of one of the Magistrates of *Cologne* being inter'd with a valuable Ring on one of her Fingers, the Gravedigger next Night open'd the Grave, in order to take it off; but we may readily suppose, that he was in no small Consternation when the suppos'd dead Body squeez'd his Hand, and laid fast hold of him in order to get out of her Coffin." The faint-hearted thief running away, this resolute lady arose from her grave and made her way home, where for some time she stood shivering in her shroud outside her own door, calling a servant by name, before she could gain admittance.[33]

Even closer, in one sense, to the Tebb-Vollum story is another related by Winslow, which concerns a supposed corpse which (or rather who) "discovered manifest Signs of Life" in the middle of a lengthy funeral sermon, whereupon "he was quickly convey'd back to his own House: So that from a

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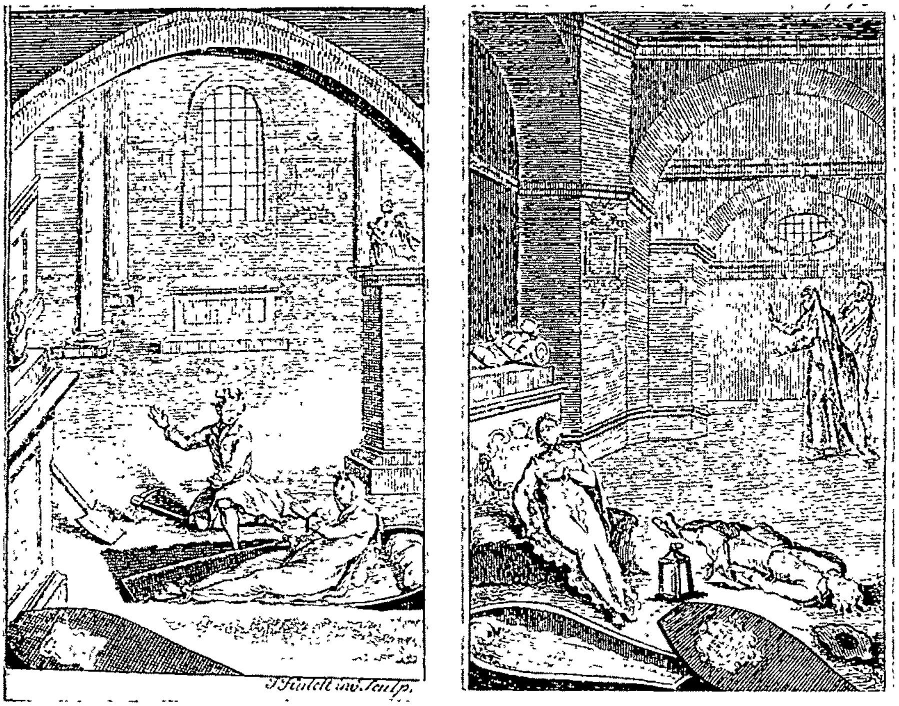
[31] There are many short accounts, some good and some bad, of the genuine fear of premature burial which was so widespread in Victorian society. A recent and somewhat surprising one is to be found in a novel published in 1975 by Dr. Michael Crichton, which includes a capsule essay on premature burial, entirely relevant to the plot. Here we may read more of Bateson: "By 1867, his preoccupation left him quite insane, and he rewrote his will, directing his family to cremate him at his death. However, suspecting that his instructions would not be followed, in the spring of 1868 he doused himself with linseed oil in his workshop, set himself aflame, and died by self-immolation." Crichton, *The Great Train Robbery* (New York: Knopf, 1975), pp. 191-194.

[32] Tebb and Vollum, *op. cit* (n. 28 above) p. 75. Cf. *Lancet*, 1866; p 611.

[33] J. B Winslow, *The Uncertainty of the Signs of Death* (London, 1746), pp. 42-43. Cf. Philipp Salmuth, *Observationum medicarum centuriae tres posthumae* (Braunschweig, 1648). Observatio LXXXVII, Centuria II (pp. 102-103) which concerns the wife of the printer Matth. Harnisch, whose story almost duplicates the adventure told by Winslow except that she was in the puerperium when she was mistakenly adjudged dead, and except that when she struggled out of her grave and returned home she was able to talk not only to a servant but also to her husband, by whom she was at last admitted and welcomed. And he afterwards had several more children by her. Elsewhere (*ibid.*, pp. 101-102, Observation LXXXVI, Centuria II.) Salmuth states: "All doctors (and not without reason) affirm that hysterical women are not to be buried before 72 hours have elapsed." For references to Salmuth I am indebted to Dr. Douglas Price.



Figs. 1 and 2. The prematurely buried rise from their coffins as illustrated in J. B. Winslow, *The Uncertainty of the Signs of Death* (London, 1746), facing pp. 43 and 70.

Consideration of Circumstances it is sufficiently obvious, that without the Intervention of the Sermon the Man had been interr'd alive."[34] From the sixteenth century to the nineteenth century, the stories varied little.

If profound lethargy was not often confused with death, other forms of suspended animation certainly were and it is probable that among these were manifestations of hysteria. Since those falling into trances were often women adjudged to have the "vapours" or hysterical fits, they were of special concern to John Purcell early in the eighteenth century. "And since Persons in this Distemper lie in *Trances* for whole days, motionless and senseless like unto dead Bodies (nay some have had the misfortune, as very credible Authors assert, to have been bury'd alive in these Fits) it will not be amiss to acquaint the Reader with some methods whereby to know whether the Patient be alive or not."[35] A thick, gross constitution of the blood, with a tendency to coagulation, was said to be the cause of a fit such as this. "The properest Remedies in this case, are, to throw *Cold Water on her Face, to burn Leather, or Feathers, under her nose,* to make her *smell* to the *Oyl of Petroleum. Galbanum, Assa Foetida. Spirit of Salt Armoniack, Spirit of Urine,* or some other such stinking things, whose Fumes being carry'd into the Lungs . . . do, by their Volatile Salts, divide and attenuate the *Blood*. . . ." A Physician might also order sneezing powder "and for the same end, others order them to be pulled by the Hair, or violent Ligatures to be made in various parts of their *Bodies,* or *Contortions* of their *Fingers,* or the Soles of their Feet to be tickled: And many other like Remedies, which all help towards the Division, Volatilisation, and brisker Circulation of the slow stagnating Blood."[36] It is clear that a sleeping beauty of this kind, a princess properly entranced, needed more than a kiss to awaken her. It is also clear, however, that she was not ordinarily taken for dead; the sneezing powder was always at hand.

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[34] *Ibid.*, p 71.

[35] John Purcell, *A Treatise of Vapours or Hysterick Fits* (London, 1707), pp. 164-65.

Before the middle of the nineteenth century a number of authors—Georget for one—reached the conclusion that catalepsy was nothing more than a form of hysteria. Bourdin and Briquet, on the contrary, maintained the nosographic independence of catalepsy. Gilles de la Tourette observed that the notion of the frequency of male hysteria, associated with the school of Salpêtrière, "vient ruiner l'opinion de Briquet au profit de celle de Georget."[37] Derangements more profound than catalepsy continued to be included in descriptions of hysteria. In the ninth decade of the century Richer devoted a few pages of his large treatise on la grande hystérie to lethargy with apparent death, recounting the story, originally reported a half century earlier by Pfendler, of a fifteen-year-old girl who had been readied for burial, when she opened her eyes and said to her doctor, "Je suis trop jeune pour mourir." More than fifty years afterwards her story seemed to Richer to be worth recounting in rather elaborate detail.[38]

Often repeated in a variety of forms, and possibly of special significance for my present purpose, is the story of the hapless, helpless victim of catalepsy, trance or coma, fully conscious of the blundering doctor's pronouncement of death, of the grieving of relatives, of the laying-out ceremony, of the measuring for shroud and coffin. From this point on, accounts differ. Sometimes the subject of so much attention breaks into a sweat. Sometimes a devoted relative or friend, a sharp-eyed clergyman or a stricken creditor, much less often a doctor, observes a twitching lip, a quivering nostril, suspicious pliancy or unaccountable warmth. On other occasions the funeral goes forward uninterruptedly. Then one nail is driven into the coffin lid. Two nails. Three. When all is finished, the hammering still goes on, but this time on the underside of the lid. Only then do the horrified bystanders realize what has happened. Suspense may be prolonged yet further, by substituting a shovelful of earth for a coffin nail as the means of reanimation. One shovel. Two shovels. Three. Then, "Hark!" says a startled grave-digger, "I think I hear somebody knocking."

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[36] *Ibid.*, first ed. (London, 1702), pp. 129-30.

[37] [Georges] Gilles de la Tourette, *Traité clinique et thérapeutique de l'hystérie d'après l'enseignement de la Salpêtrière* (Paris, 1895), pt. 2, v. 1, p. 267. Cf. P. Briquet, *Traité clinique et thérapeutique de l'hystérie* (Paris, 1859).

[38] Paul Richer, *Études cliniques sur la grande hystérie ou hystéroépilepsie,* 2nd ed. (Paris, 1885), p. 261. Cf. Georges-Fr. Pfendler, *Quelques observations pour servir à l'histoire de la léthargie* (Paris, 1833)—Richer mistakenly gives the date 1883.

This popular horrific literature—even Gould, with his wonderful appetite for oddities and horrors, complains of the plethora in this department—was paralleled, and supplied with materials, by solid medical authors in a multitude of works on jurisprudence and forensic medicine. Bruhier's book, *On the Uncertainty of the Signs of Death,* which falls somewhere between these categories, was perhaps the best known of the special monographs, but it was one among many.[39]

More important still was the preoccupation of the vitalists of the eighteenth century and early nineteenth century with the definitions of life and death, with the distinctions between the vital and the inanimate. After Théophile de Bordeu and the rest of the Montpellier School, Hunter and Bichat were the most significant leaders. All remarked that death has a number of stages, which they sought to delineate and to understand, each in his own way. As late as 1870, Virchow invented a new word, "necrobiosis," to cover certain phenomena of this order. A. P. W. Philip, approximately contemporary with Abernethy, devoted a laborious career to the study of vital action, his work culminating in a long series of papers in the *Philosohical Transactions* in the 1830s, which he gathered together in a book, *On Sleep and Death.* Dr. Philip, an anti-vivisectionist, performed almost all of his experiments, as did Abernethy, on freshly killed animals. He considered that all the vital functions, the sensorial only excepted, continued for a short time little impaired. As for respiration, this he believed to be essentially voluntary, though rendered unconscious by habit, and consequently dependent on the sensorial system. He separated it thus from other vital, involuntary functions. Not unrelated to all of this was the Brunonian doctrine of irritability, stimulus and sedation.

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[39] J.-J. Bruhier d'Alaincourt, *Dissertation sur l'incertitude des signes de la mort et l'abus des enterremens, et embaumemens précipités,* 2e éd., 2 v. (Paris, 1749).

Philip declared that "all modes of death, with the exception of that from old age, may be regarded as more or less violent." He considered, however, that "as death, in the usual acceptation of the word, from whatever cause it arises, consists in the loss of sensorial functions alone, the act of dying is, in this respect, in all cases essentially the same. In all my experiments I found the nervous and muscular surviving the sensorial functions."[40] The "sensorial functions" were thus regarded as separable from all other functions. If, indeed, "death, in the usual acceptation of the word . . . consists in the loss of sensorial functions alone," it could be nothing more, in its first stage, than loss of consciousness together with stopped breathing; "animation," in the sense of voluntary movement, was of course suspended but motor function could be demonstrated still.

This was a dozen years later than Magendie's demonstration of the so-called Bell-Magendie law, but any significant link between Magendie (or even Bell) and A. P. W. Philip is unlikely. Philip is of course unimportant except as he gives evidence of the climate of thought and opinion in the decades preceding the birth of anesthesia. The work of Magendie was no doubt an important element in this climate, but for the history of anesthesia Philip's is the more interesting manifestation. His essay on the nature of death was a decade later, too, than Hickman's pamphlet on suspended animation. Also unnoticed, and fifteen years before Philip's essay, had been a strange book, to be remarked on below, entitled *The Disorder of Death,* in which concepts somewhat similar to his had been apparent. "Death" might be too strong a word. "Suspended animation" in the sense of "suspended life" was better, but if taken to mean that movement or liveliness was alone suspended it was an inadequate term; what were also suspended, and most importantly, in both states, were all the "sensorial functions," breathing included.

Methods of resuscitation, popular as well as medical, have left ample record. In *Pericles, Prince of Tyre,* Act III, Sc. II, Cerimon, a Lord of Ephesus whose hobby is the study of physic and who "can speak of the disturbances that nature works," receives from his servants a large sealed chest ("'Tis like a coffin,") which proves to contain the daughter of a king, the wife of Pericles, consigned to a watery tomb, unless dashed ashore for burial, after her apparent death in childbirth. "This chanc'd to-night," says Cerimon,

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[40] A. P. W Philip, "On the nature of death," *Phil. Trans.*, 1834, p. 174 Wilson Philip's work was not unimportant, especially his *An Experimental Enquiry Into the Laws of the Vital Functions* (1817). Cf W. H. McMenemy, "Alexander Philips Wilson Philip (1770-1847), physiologist and physician," *J. Hist. Med.*, 1958, *13:* 289-328 Positive aspects are stressed by Edwin Clarke in *D.S B.*, X (1974), 581-582.

> For look, how fresh she looks. They were too rough
> That threw her in the sea. Make fire within;
> Fetch hither all the boxes in my closet.
> Death may usurp on nature many hours,
> And yet the fire of life kindle again
> The o'erpress'd spirits.

He calls for fire and cloths, as well as for the contents of his boxes.

> The rough and woeful music that we have,
> Cause it to sound, beseech you . . .
> The music there! I pray you, give her air.
> Gentlemen, this queen will live; nature awakes,
> A warmth breathes out of her: she hath not been
> Entranc'd above five hours: see how she gins
> To blow into life's flower again.[41]

Pericles, Prince of Tyre unquestionably derives from the anonymous romance, *Apollonius, Prince of Tyre,* which probably dates from the third century A. D. and in which the story is told rather differently, for the resuscitation is not carried out by a Lord of Ephesus but by a medical student. Oddly enough this medical student does not employ rough and woeful music. Among the other things that he does, it is reported that he exercises the victim's arms.[42]

Sober history, as well as legend and drama, supplies many examples of resuscitation, and drowning was by no means seen as the only hazard capable of "ending" life in a way not really irreversible. Not even hanging could be relied upon to finish those judged incorrigible, putting them altogether beyond recall. In the seventeenth century many criminals were apparently stout rascals, or sturdy rogues not easily put down, and not a few hangmen seem to have been more or less incompetent. Philip Caraman relates the story, as told by Fr. John Robinson,

> of John Bartendale, the felon whom he had confessed on the eve of his execution on 27 March 1634. Bartendale had been a strolling piper. After he had hung on the gallows three-quarters of an hour he was cut down for dead and buried near the place of execution. The hangman had not reckoned on the strength of Bartendale's throat

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[41] William Shakespeare, *Pericles,* Act III, Scene 2

[42] Cf. Darrell W. Amundsen, "Romanticizing the ancient medical profession: The characterization of the physician in the Graeco-Roman novel," *Bull. Hist. Med.,* 1974, *48:* 326-327

muscles. Shortly afterwards, Sir Thomas Vavasour of Haslewood, passing on his way to the city, saw the freshly-turned soil heave close to his path. At once he dismounted, and with his servant's help, 'dug up the convict all alive.' At the next Assizes the Judge mercifully ruled that Bartendale was legally dead. He was released through the intercession of his deliverer, who took him into service at Haslewood: but in intervals of work he went into town,

> And in York continued blowing
> Yet a sense of goodness showing.[43]

Beginning, then, about the mid-seventeenth century (although, as we have seen, earlier examples may be found) the resuscitation of those apparently drowned or hanged was from time to time attempted and with occasional success. William Petty and Thomas Willis were among those involved in the strange story of the resuscitation of Anne Green after her hanging for the murder of her bastard child in 1650 in Oxford. Restored to life following the supposed hanging, she was pardoned, married, had several children, and lived fifteen years longer. Such an episode, like that of John Bartendale, suggests, of course, that what were intended to be hangings were not infrequently strangulations or suffocations and that the distinction between these and hanging was not always appreciated. (Modern dictionaries even declare that the transitive verb to *hang*, means simply "to suspend by the neck until life is extinct.") Anne Green obviously did not sustain the kind of injury to the cervical spinal cord which constitutes a successful hanging. Feindel remarks that "her recovery was possibly influenced by a surprisingly modern approach to resuscitation and by the December 'hypothermia' in Oxford, since we read that her breathing in the coffin was first perceived by a lusty fellow who 'stamped on her breast and stomach severall times with all the force he could,' and that she was 'stretched out in a coffin in a cold roome and Season of the year.'"[44]

In the mid-eighteenth century Fothergill addressed a speculative paper on resuscitation to the Royal Society. In 1767 Récamier made several attempts in Switzerland at the resuscitation of the drowned, and sent reports of his work to Paris. In the same year the first humane society was established in Holland, to be imitated a few years later in the creation of the Royal Humane Society and its American counterparts in Massachusetts and Pennsylvania.

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[43] Philip Caraman, *Henry Morse Priest of the Plague* (London: Longmans, 1957), p. 59.

[44] *Thomas Willis: The Anatomy of the Brain and Nerves*, tercentenary edition 1664-1964, William Feindel, ed. (Montreal: McGill, 1965), vol. I (Introduction), p. 38. Kingsmill Lucy, an Oxford undergraduate of the time, offered a couplet:

> "Thus 'tis more easy to recall the Dead
> Then to restore a once-lost Maidenhead."

Artificial respiration with bellows, which dates as a laboratory measure from the sixteenth century, was supplemented by applications of heat and a variety of stimulants and irritants. It was presently supplanted by manipulations of the kind still employed—the Marshall Hall method, the Sylvester method, the American method and a dozen others, of which the best known is still the Schafer method, though it, too, has been superseded quite recently.[45] At the moment, the method of choice, if a hospital is not at hand, is that which was once employed by Elijah.[46]

The movement which began before the start of the eighteenth century, which was established once again by Récamier and others, and which took its most important and memorable form in Holland, was of course typical in certain ways of the saving of life and the guarding, economizing and enhancement of life which were among the characteristic aims of the enlightenment,[47] but it was typical, too, of a quite different attribute of the time. The enlightenment, backing more or less sedately away from the supernatural, was not on that account less interested in the marvellous; it is even possible that the expansion of one kind of credulity was some sort of compensation for the shrinking of another. At any rate, not all of the cognoscenti refused to notice the wild and the wonderful; and if some of the coloration of science could be assumed, all the better. Besides, what might be labelled credulity by some might to others appear as laudable curiosity. Benjamin Franklin, it is well known, displayed a darting interest in many lesser things than lightning and politics; and he often displayed an easy, unlabored humor. It was in London that the sage gave his attention to certain wine bottled in Virginia, on an occasion when three drowned flies fell into the first glass that was filled. These flies were exposed to the sun upon a sieve, and in less than three hours two of them recovered and flew away. Apropos of this, Franklin expressed "a very ardent desire to see and observe the state of America an hundred years hence" and felt that he would

> prefer to an ordinary death, the being immersed with a few friends in a cask of Madeira, until that time, then to be recalled to life by the solar warmth of my dear country! But since, in all probability, we live in a century too little advanced, and too

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[45] An interesting and fairly extensive history is found in chapters 2 and 3 of John W. Peason, *Historical and Experimental Approaches to Modern Resuscitation* (Springfield Thomas, 1965).

[46] Richard V. Lee, "Cardiopulmonary resuscitation in the eighteenth century A historical perspective on present practice." *J Hist. Med.*, 1972, *27:* 418-433. Cf Elizabeth H Thomson, "The role of physicians in the humane societies of the eighteenth century," *Bull Hist. Med.*, 1963, *37.* 43-51.

[47] Martin Patak, *Die Angst vor dem Scheintod in der 2. Halfte des 18. Jahrhunderts* (Zurich: Juris, 1967). Cf. E. H Ackerknecht, "Medizin und Aufklarung," *Schweiz. med Wochenschrift*, 1959, *89.* 20.

> near the infancy of science, to see such an art brought in our time to its perfection, I must, for the present, content myself with the treat, which you are so kind as to promise me, of the resurrection of a fowl or a turkey cock.

This letter, dated from London, April 1773, was addressed to Jacques Barbeu Dubourg. It begins

> Your observations on the causes of death, and the experiments which you propose for recalling to life those who appear to be killed by lightning, demonstrate equally your sagacity and your humanity.[48]

We have already seen that a similar humanity, if not sagacity, was demonstrated by many of the contemporaries, or near contemporaries, of Barbeu Dubourg, and that in these respects he had had forerunners. Resuscitation, whether after a stroke of lightning or after drowning, was not, of course, to be limited to fowls and turkey cocks; it had for long gone beyond them, at least in cases of drowning. In the same year as Franklin's letter to Barbeu Dubourg, Philippe-Nicolas Pia published in Amsterdam and Paris a small duodecimo, fated to have many supplements, under the title *Détail des succès de l'établissement que la ville de Paris a fait en faveur des personnes noyées,*[49] a book equipped with a bibliography which traced the relevant literature back to 1700. In the following year, 1774, there was published in Paris Joseph-Jacques de Gardane's *Avis au peuple, sur les asphyxies ou morts apparentes et subites.*

Books and pamphlets on resuscitation multiplied rapidly. Cartwright suggests, or rather speculates, that one of these books, the work of Edmund Goodwyn, may have been known to Hickman.[50] Published in 1788, it was entitled *The connection of life with respiration; or, an experimental inquiry into the effects of submersion, strangulation, and several kinds of noxious airs on living animals; with an account of the nature of the diseases they produce, and the most effectual means of cure.* Whether or not he was acquainted with this particular work, Hickman undoubtedly had read something of the same order. It is interesting to observe of Goodwyn's book (described by Beddoes as "a most masterly experimental investigation of the function of respiration") that he denied the possibility of an intermediate state between life and death, disapproved of the terms "suspended life" and "suspended animation," and chose instead to write of "diseases," or of a"disease," which he called "melanaema."[51] This "disease," produced by hanging, drowning, etc., he considered curable. A little more than thirty years later, death itself, as we shall see, was to become a "disorder."

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[48] Leonard W. Labaree and Whitfield J. Bell, Jr. (Eds.), *Mr. Franklin, a Selection from His personal Letters* (New Haven. Yale Univ. Press; London. Oxford Univ. Press, 1956), pp. 27-29.

[49] [Philippe-Nicolas] Pia, *Détail des succès de l'établissement que la ville de Paris a fait en faveur des personnes noyées, avec les différentes instructions qui y sont relatives, et la manière dont on doit faire usage des objets contenus dans la boite où se trouvent réunis les principaux secours qu'on doit administrer aux noyés. On y a joint une notice chronologique des différents ouvrage publiés sur cette matière depuis 1700* (Amsterdam and Paris, 1773), This was supplemented by six additional brochures, one published annually, and an eighth, entitled *Précis des succès de l'établissement . . .* (Paris, 1789).

[50] Cartwright, *op. cit.*, (n. 11 above), p. 273.

John Hunter, who was inevitably interested in this trend, had published "proposals for the recovery of persons apparently drowned" in the *Philosophical Transactions* for 1776.[52] Miss Dobson has supplied us with a careful account of his efforts to resuscitate the Rev. William Dodd when that pitiful forger was hanged.[53] It is worth remarking that Hunter was a pioneer in the study of hibernation, and that his investigations of suspended animation generally, extending as they did over many years, had begun with some abortive work on hypothermia. He had even dreamed, as did Rider Haggard after him, of preserving a human life across several centuries by mean of cold.[54]

This grouping of Hunter's interests around various forms of suspended animation was of course related, as already hinted, to the core of his biological faith, Hunterian vitalism. But such a grouping was by no means unique. Marshall Hall, whose name was attached to a method of resuscitation widely used, was considered at a later date the leading authority in Great Britain on hibernation; he contributed in the 1830s a long article on this subject to Todd's *Cyclopedia of Anatomy and Physiology*. It is not without interest to observe that James Braid, who, with Esdaile and Elliotson, was one of the chief proponents of hypnosis as a means of making surgical operations painless in the years immediately preceding the introduction of ether anesthesia, called one of his books *Observations on Trance, or Human Hybernation.*[55]

Many an eastern fakir, so it is alleged, has been able to enter into a trance at pleasure, losing all signs of life and presenting the most astonishing proofs of death for several hours, for several days, or even, *mirabile dictu,* for several weeks. At least one fairly well-attested case of this kind, although of short duration, reaches us from the west, where it is to be found in a famous eighteenth-century medical treatise, George Cheyne's *The English Malady* (1733). This is the amazing story of the honorable Colonel Townshend, who came to Bath in a litter and put up at the Bell Inn, suffering from a "*Nephritick* Complaint" and summoning to his bedside two physicians (Cheyne, of course, was one) and an apothecary. "He told us, he had sent for us to give him some Account of an *odd Sensation,* he had for some Time observed and felt in himself: which was, that composing himself, he cou'd *die* or *expire* when he pleas'd, and yet by an Effort, or some how, he could come to Life again; which it seems he had sometimes tried before he had sent for us. We heard this" Cheyne added gravely, "with Surprize." The medical gentlemen were unable to explain the mystery and Townshend apparently felt compelled to give them a demonstration. Composing himself, therefore, he proceeded to *die* or *expire.* At any rate the committee could find no signs of life—one checking the pulse and one the heart while the third tried and failed to find "the least Soil of Breath on the bright *Mirror* he held to his Mouth." Satisfied that Colonel Townshend was actually dead, the two physicians and the apothecary prepared to leave him, whereupon, after about half an hour, he showed signs of returning life and was presently quite restored. Confounded and puzzled (the words are Cheyne's) the three attendants gave up, after some further conversation with the Colonel, all attempt to explain his apparent death and the resuscitation in which they had played absolutely no part. "He afterwards called for his *Attorney,* added a *Codicil* to his *Will,* settled Legacies on his Servants, received the *Sacrament,* and calmly and composedly expir'd about five or six a'Clock that evening."[56]

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[51] *Ibid.*, p 274

[52] *The Philosophical Transactions*, 1776, *46*. 412-425; also in Hunter's *Collected Works*, vol. 4 (London, 1837), pp. 165-175

[53] Jessie Dobson, *John Hunter* (Edinburgh & London: E. & S Livingstone, 1969), pp 161--163.

[54] Incidentally, Hunter performed an almost painless amputation in 1784, employing the nerve compression method of his pupil, James Moore.

[55] James Braid, *Observations on Trance, or Human Hybernation* (London, 1850).

The two doctors and the apothecary had tried, according to Cheyne's account, to dissuade the Colonel from trying his extraordinary experiment ("not to be accounted for from now *common Principles*") lest "in his weak Condition, he might carry it too far." He obviously did not carry it too far—not at least the first time. Whether his death that evening (presumed to have been final) was the result of accident, suicide or mere coincidence there seems to be no way now to tell. An autopsy revealed a kidney lesion, not unexpected, but nothing else.[57]

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[56] George Cheyne, *The English Malady: or, A Treatise of Nervous Diseases of All Kinds* (London, 1733), pp 308-309.

[57] *Ibid.*, p. 310. Not unlike Col Townshend's case is that of a certain presbyter, aptly named Restitutus, whose talents are vouched for by St. Augustine: "Whenever he pleased (and he used to be asked to do it by those who desired to have a firsthand knowledge of the amazing phenomenon), he would withdraw from his senses to an accompaniment of cries as of some person in distress and lie still exactly like a dead man. In this state he not only was completely insensitive to pinching and pricking but at times was even burned by the application of fire and yet felt no pain except afterwards from the wound. Proof that his body remained

In Canto IV of *Don Juan* (which began to appear in 1819, this canto published in 1821) Juan was reported badly wounded by a "wary, cool old sworder" of a pirate who wielded his cutlass well;

so well, ere you could look,
His man was floored, and helpless at his foot,
With the blood running like a little brook. . . .[58]

Haidée, at the sight of "Juan's gore," was altogether overcome, and on her father's arm "fell she like a cedar felled." The best efforts of "her summoned handmaids" were of no avail.

Of herbs and cordials they produced their store,
But she defied all means they could employ,
Like one Life could not hold, nor Death destroy.
Days lay she in that state unchanged, though chill—
With nothing livid, still her lips were red;
She had no pulse, but Death seemed absent still;
No hideous sign proclaimed her surely dead;
Corruption came not in each mind to kill
All hope; to look upon her sweet face bred
New thoughts of Life, for it seemed full of soul—
She had so much, Earth could not claim the whole.[59]

Although "she woke at length" it was a matter of "short solace, vain relief!" and after twelve days and nights of torpor she ultimately died. We learn with little surprise that

they who watched her nearest could not know
The very instant. . . .[50]

It is, in fact, somewhat surprising that they ever figured it out at all. Haidée has many counterparts (at least in the manner of her death) in Victorian fiction.

Earlier in the poem we have been informed that

this is the patent age of new inventions.[61]

It was, besides, an age of many discoveries, not least among them the one

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motionless, not through deliberate effort, but through absence of feeling was provided by the fact that, like someone deceased, he showed no sign of breathing. Nevertheless, he later reported that he could hear people talking, as though from a distance, if they spoke distinctly enough." *Saint Augustine: The City of God,* with an English translation by Philip Levine, XIV.24 (Loeb Classical Library, 1966, vol. 4, pp. 390-91).

[58] George Gordon, Lord Byron, *Don Juan,* Canto IV, stanza 49

[59] *Ibid.,* stanzas 59-60.

[60] *Ibid* , stanza 69.

[61] *Ibid.,* Canto I, stanza 132.

> With which the Doctor paid off an old pox,
> By borrowing a new one from an ox.
>
> Bread has been made (indifferent) from potatoes:
> And Galvanism has set some corpses grinning,
> But has not answered like the apparatus
> Of the Humane Society's beginning,
> By which men are unsuffocated gratis:
> What wondrous new machines have late been spinning![62]

In 1819 the Rev. Walter Whiter published from Norwich a remarkable volume, entitled *A Dissertation on the Disorder of Death; Or that State of the Frame under the Signs of Death called Suspended Animation; to which Remedies have been sometimes successfully applied, as in other Disorders; in which it is recommended, that the same Remedies of the Resuscitative Process should be applied to cases of Natural Death, as they are to cases of Violent Death, Drowning, etc., under the same hope of sometimes succeeding in the attempt.*

> Amidst [all their] fears and precautions about Premature Interment, [wrote Whiter] men acknowledge that recovery is possible, and therefore that the Vital Principle may be still extant; and what is their conclusion? Not that Remedies should be applied to excite and bring it again into action, but that it should be suffered to extinguish itself.[63]

Not so the rector of Hardingham. If resuscitative measures—warmth, stimulation, cordials of various sorts, massage, artificial respiration, electricity—if these were sometimes capable of restoring life to the suffocated, the drowned, the hanged, the exsanguinated, the electrocuted and the "frozen," then why should they not succeed with those who died more peaceably of fevers with little or no structural alteration? It being difficult indeed to distinguish death from trance, catalepsy, and so forth, the attempt should always be made. Certainly no one can deny that lives have been lost through indifference or ineptitude in resuscitation in a certain category of cases. Death itself Whiter considered as not necessarily fatal. In fevers death might be only the final crisis of disease. The animal powers having exerted themselves to the utmost to overcome the disorder might sink back in exhaustion, requiring nothing more than a touch on the pendulum to set them going once again. Thus restored, the patient would be found to be free of his fever. Death could sometimes be regarded, therefore, not only as a

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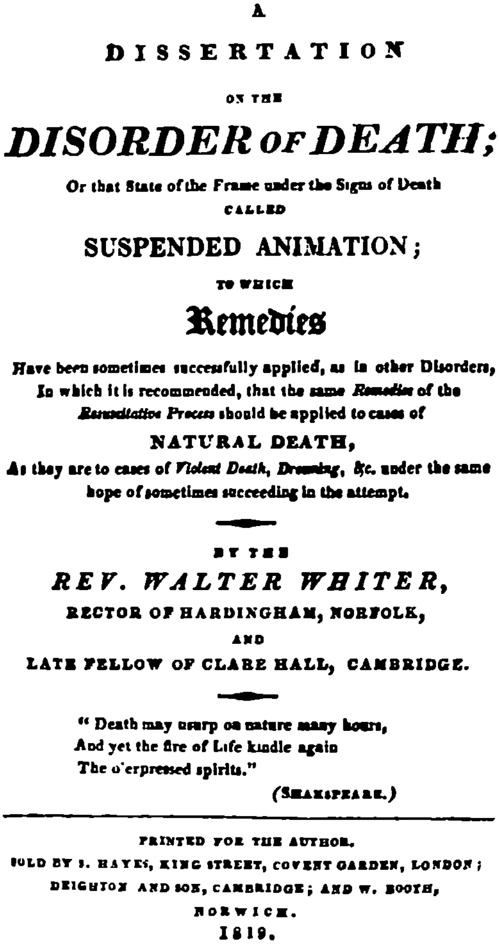
[62] *Ibid*, stanzas 129-130.

[63] Walter Whiter, *A Dissertation on the Disorder of Death* (Norwich, 1819) p. 62



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hope of sometimes succeeding in the attempt.

BY THE
REV. WALTER WHITER,
RECTOR OF HARDINGHAM, NORFOLK,
AND
LATE FELLOW OF CLARE HALL, CAMBRIDGE.

"Death may usurp on nature many hours,
And yet the fire of Life kindle again
The o'erpressed spirits."
(SHAKSPEARE.)

PRINTED FOR THE AUTHOR.
SOLD BY J. HAYES, KING STREET, COVENT GARDEN, LONDON;
DEIGHTON AND SON, CAMBRIDGE; AND W. BOOTH,
NORWICH.
1819.

Fig. 3. Title page of the Reverend Walter Whiter's book. Courtesy of the Osler Library, McGill University. Cf. *Bibliotheca Osleriana*, no. 5583.

mere disorder in itself, but as a possible cure for other disorders. Had not Fothergill suggested that suspended animation would be the very thing for the treatment of insanity, epilepsy and canine madness? Had not Erasmus Darwin hinted at this method of treating fevers? The reverend Mr. Whiter did not propose to kill the patient; he merely proposed to take advantage of his natural death in order to make him well. In fairness I ought to admit that Whiter distinguished between the non-fatal and fatal forms of death, and that he expected only occasional successes.

He had, however, one other

> suggestion on the cultivation of the Resuscitative Art, which [he said] is altogether direct and obvious, when the case of Death is connected with a Surgical operation. This obvious idea is, that the Practitioner should seize on the favourable opportunity, afforded by the State of Suspended Life, for the performance of his operation, and that the Resuscitative Process should not commence, till everything relating to this business has been duly executed. If in any future time the Suspension of Animation by Art can be safely admitted, we at once see what important consequences will result in various cases. The Artist may be embarrassed in his deliberations by the dangerous nature both of the case and of the operation, as tending to organical injury if the operation should be delayed, and impeded likewise by the fears of the Patient, who prefers Death in any form to the pain which he must endure under the hands of the Operator.—The device of Suspended Animation unravels all these difficulties both to the Patient, and the Artist: The Patient tortured with present pain and dreading its continuance or increase, with Death finally before his eyes, readily resorts to the refuge of Suspended Animation, as to a blessed Asylum, from which he expects to escape, free from all his evils, and unconscious of the perilous conflict, which he was destined to encounter.—The Artist proceeds forward in his work in a deliberate, decided and effective manner, unembarrassed by the impediments which obstruct such operations in a feeling body, disturbed by a terrified mind.[64]

On a later page Whiter relates the story of the eighteenth-century surgeon, Rigby, who was confronted by a case of death-like post-partum syncope, and who boldly judged the occasion an appropriate one for surgery. He performed a necessary operation and was vindicated by complete success.[65] Unknown to Whiter, James Wardrop, in the very year of publication of *The Disorder of Death,* tried suspending animation by art, the art of bleeding. This he recommended in carefully selected cases only. Four years later, in 1823, Hickman first tried his hand at the delicate art of suffocation.

In a footnote near the beginning of his volume, Whiter poses the following question. "With respect to Suspended Animation we might ask, whether any respiration of Air, even in the smallest quantity, be at all necessary for preserving the irritability of the fibres, on which alone our hopes of recovery are founded." (This was a question which the sophisticated Goodwyn would not, of course, have asked. On the other hand the sophisticated Goodwyn did not suggest making use of "melanaema" for surgery.)

Students of hibernation, who did not always designate the true hibernants in the manner which now prevails, were working their way to the conclusion, a conclusion they eventually reached by confounding together the poikilotherms and the homeotherms, that the more respiration is depressed the greater becomes irritability. This is something both Whiter and Hickman would have been glad to know.

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[64] *Ibid.*, pp. 415-16. In the fourth century A.D. St. Hilary of Poitiers declared that "when through some grave necessity part of the body must be cut away, the soul can be lulled to sleep by drugs, which overcome the pain and produce in the mind a death-like forgetfulness of its power of sense." *A death-like forgetfulness of the power of sense* continued to be the aim. M. F. Ashley Montagu, "A fourth century A.D. reference to anesthesia," *Bull. Hist. Med.*, 1946, *19*: 114.

[65] *Ibid.*, p. 425.

So far as is known, only one contemporary comment on Hickman's work appeared in print. This was in *The Gentleman's Magazine,* not in a medical journal, and the reviewer supposed that Hickman's readiness to submit to suspended animation according to his own method would betray him, if the necessity actually arose, not to the dangers of death from asphyxiation but to a degree of pain equalling or surpassing that ordinarily experienced in the operating room. What this comment signifies it is hard to say. I venture to think, however, that to this hack reviewer suspended animation was apparent death, with its attendant danger of premature burial, and he thought at once of the many stories of death-like trance without impairment of consciousness or sensibility.

However this may be, I have no doubt whatever that for most laymen and perhaps for many physicians, trance states, catalepsy, mesmerism and so forth were forms of suspended animation, a term by no means rigidly limited to a single meaning, asphyxia. Just as it was impossible at first to separate anesthesia from asphyxia with perfect assurance, so it was impossible for many to separate either of these from concepts belonging to suspended animation of quite different kinds. When John Forbes, editor of the *British and Foreign Medical Review,* received the wonderful news from Boston in 1846, his first comment was a surprising one. He said that "if the new process shall supersede that employed, with a like object, by the mesmerists, we must concede to them that it supplies, from analogy, additional reasons for believing in their statements in regard to the production by their process, of insensibility to pain."[66] To produce suspended animation the mesmerists had used one method and now the Bostonians had found another—so his remark may be interpreted. That anesthesia was something altogether new did not perhaps occur to many people, doctors included; it was of course new, gloriously new, in the sense that it worked, and worked more or less reliably, worked with just about everybody; but in its most essential feature it was nothing more than good old suspended animation. It is true that not many had thought of bringing about suspended animation for surgical purposes, but who on the other hand had had a prophet's vision of "true anesthesia"? And when true anesthesia arrived, did everyone recognize it? Ozanam, some little time later, still took it to be merely asphyxia. Ozanam was a scientist, a French scientist, a representative of advanced thought. If Ozanam did not see "anesthesia" as new, if Forbes, a knowedgeable British physician, did not see it as really new, why should others, however jubilantly they acclaimed it, have considered it to be absolutely an innovation? It was new enough to need a new name, true, but was it not, at the same time, a novel version of something long familiar? A new idea can be more easily handled if it can be assimilated in some way to an old idea.

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[66] *British and Foreign Medical Review*, January 1847, *23:* 312.

Wardrop aimed at syncope from haemorrhage. Hickman aimed at asphyxia. Whiter was perhaps distinguished by his greater frankness or foolhardiness; he aimed at "death." None of these suggestions were taken up by the medical profession.

What nobody aimed at, because nobody thought anything about it, was anesthesia in anything like the present sense of the word. The New England dentists, Wells and Morton, were little burdened by theoretical concepts. So far as we know, such concepts had little weight with Crawford Long, although he was sophisticated enough to try to exclude the factor of suggestion, a sort of accidental mesmerism, by remarkable controlled experiments. If Wells, Morton and Long aimed at anything more than pain prevention, a purpose lofty enough, they aimed, in my opinion, at producing intoxication. Alcohol remained the preoperative standby, supplemented by opium, and Collyer was even attempting to use both of these drugs as inhalants.[67] Nitrous oxide and ether were known chiefly, apart from their internal uses as antispasmodics, as the producers of genteel drunkenness. I leave aside the question whether either agent was used at first for producing "true anesthesia" or only analgesia. Who knew what "true anesthesia" might be?

But if better, more effective intoxication was what the American pioneers really thought they had found, there were many who took their discoveries to be new methods of inducing asphyxia, the type, but by no means the only type, of suspended animation. Suspended animation or suspended life was a long-familiar concept, in some way allied with a remarkable malady—with "melanaema," with the "disorder of death"—or with the state of trance or coma, with the mesmeric state or with some other condition, not necessarily "pathological," closely simulating death.

The fact is that death was by this time divided. It was no longer categorical, no longer absolutely inappealable; it was now an event which took place in rather ill-defined stages and the point of no return had yet to be established. Resuscitation after apparent death had been known, ever since antiquity, to be sometimes possible, and in the late eighteenth century it had become the object of activity, of effort. It had become a reasonable aim. Resuscitation had lost, in a large degree, the quality of miracle or near miracle. This being so, and recovery no longer unexpected, perhaps it was not surprising that attempts should be made to induce, for the needs of surgery, a state of suspended animation. If people had not become intolerant of pain they were no longer, at any rate, tolerant of apparent death; they believed in resuscitation. If Whiter was extraordinary in seeing "natural" death (the kind which rarely called forth attempts at resuscitation) as an opportunity for surgery, it was somewhat less remarkable to see the other kind of death (the kind which so often yielded to resuscitators) in that way, and even to see it, in the manner of Hickman, as an opportunity to be procured by art. There is a sense in which the most astounding thing about Hickman is that he was apparently unique, or nearly so. Perhaps we need not be surprised, however, that "death" remained dismaying still. Even the Rev. Mr. Whiter did not propose to bring it about—only to take advantage of its occurrence. On the other hand a new kind of intoxication was, in fact, a sort of pot valor, not only for patients but also for doctors.

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[67] René Fulop-Miller, *Triumph Over Pain* (Indianapolis-New York Bobbs, Merrill, 1938), p. 266

To the world in general, the result was in some sense a familiar one. The result was a "new process" to induce suspended animation.

BUILDING A HOSPITAL OF AIR: THE VICTORIAN PAVILIONS OF ST. THOMAS' HOSPITAL, LONDON

GRACE GOLDIN

The pavilions of St. Thomas' Hospital, London, opened to the public in 1871 (Fig. 1) are in the process of demolition. In 1975, only the central chapel and Governors' Hall, and the three pavilions south of them toward the Medical School, still stood. The northern half of the magnificent site across the Thames from the Houses of Parliament is principally occupied by an enormous square 14-story ward block; dwarfing the pavilions, with 4- and 6-bed wards around its periphery and an artificially lit and ventilated service core requiring the largest air-conditioning unit in the British Isles.

The new ward blocks—in a form long known by Americans as "race-track wards" and by the British as "deep planning"—are scarcely revolutionary in design. Nor were the nineteenth-century pavilions of St. Thomas' a new

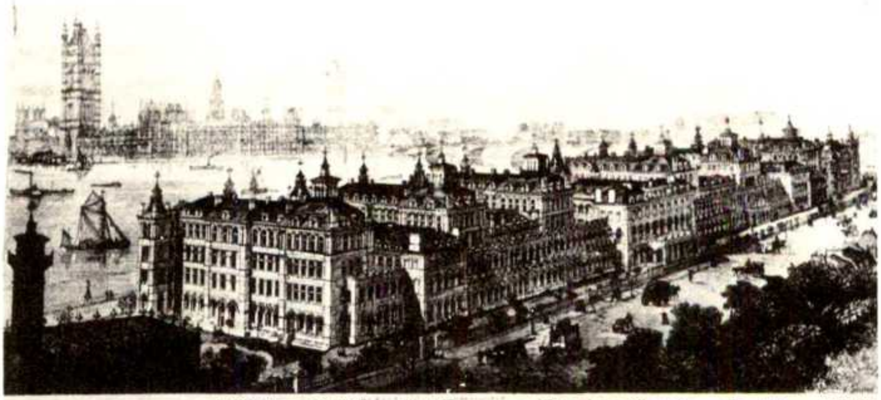

Fig. 1. St. Thomas' Hospital, 1871, looking west toward the Thames and the Houses of Parliament. Courtesy of the Hospital.

BULLETIN OF THE HISTORY OF MEDICINE 49 512-535 (1975)
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development. The pavilion principle had already been recognized as the best one for hospitals, and no expense was spared to make St. Thomas' the best example of the accepted type. Its remaining pavilions now look very old; the praise of present-day planners, nurses and hospital administrators for the way these wards work, and have been working for a century, cannot but sound like a eulogy. But there is a way to make the buildings young again. Turn to the pages of the contemporary press, *The Builder, The Building News,* and *Lancet,* and there find them bright and shining. The writers speak up loud and lively, they contradict one another, lose their tempers, and are hopelessly short-sighted as to what will be happening in medicine and architecture 25 or 50 years after their time, but they do convey what was expected of St. Thomas' pavilions.

Hospital design was front-page news, then as now. Now our most urgent concern is to build a hospital we can afford. Then they had just discovered that the way in which a hospital is built affects the health of its patients and even their chances for survival. Medicine could still not cure in a majority of cases, but people had begun to suspect—with reason—that hospitalization in itself might often kill those who, had they remained at home under the same care and treatment, would have remained alive. The workings of germs were still not clearly understood even by *Lancet,* but the baleful influence of filth had been proven. Above all, there was mounting distrust of what was termed "vitiated air"—air corrupted by many sick housed under one roof. But there was no clear notion what to do about it. *Lancet* (Feb. 27, 1864) observed that, practically, contagion was being disregarded by the physicians of London, who distributed fever patients through the wards as a lesser evil than that resulting from their concentration. Presumably it was feared that many such cases concentrated within four walls could generate an intensity of infection that would, so to speak, blow up the hospital. Whereas a way had been discovered to defuse, or diffuse, contagion in single cases. *The Builder* (Sept. 22, 1860) reported that in a new regimental hospital,

> Of course there is no "ward for contagious diseases." Should the surgeon wish to isolate a case, he has only to leave one or more beds on either side of his patient empty. If that does not satisfy him, all he has to do is to open the end doors and windows which would enable him to pour in such a flood of air as must surely blow away every particle of contagium!

In Europe generally, there was a new sensitivity to the sanitary dilemma. To this must be added, in the case of Great Britain, the particular experience of Florence Nightingale during the Crimean War. This redoubtable lady decided to accept the government's call to Turkey in order to demonstrate the efficacy of female trained nursing—first in a military hospital, and by extension in general hospitals at home. It was then thought morally wrong that gentlewomen should engage in the menial task of nursing, and that women should nurse men. With a corps of 38 nurses, some of them nuns, Florence Nightingale set sail in 1855, to prove a point. The situation she found herself in at the former Turkish military barracks at Scutari, then serving as a hospital for sick and wounded soldiers of the British army, proved several points to her which she never forgot, never lost sight of, never gave up fighting for, and never qualified in her lifetime (she died in 1910 at the age of 90). Her incredibly voluminous life work—toward organizing proper military hospitals in Great Britain, toward reorganizing the British army medical system in India, toward designing effective civilian hospitals at home—was a fulfilment of her commitment to the dead of the hospital at Scutari.

Omitting here her well-known services to nursing education, we want to stress the effect her ideas of hospital design had on the shape eventually assumed by St. Thomas' Hospital. Any hospital Florence Nightingale took a hand in forming—and the time came when all hospital plans were submitted to her for approval—must be the opposite of the Scutari barracks, where she took over from military men who had bungled everything. Single-handed, she set the 2,500-bed hospital running again, only to find herself ignominiously defeated not by military stupidities but by fevers generated by the site: by decaying water pipes and ancient sewers leading under the wards so that the barracks seemed almost to float on a sea of filth. To these baleful influences, 4,600 of "her sick" fell victim. The mortality rate of the Crimean disaster came to 73 percent in six months from disease alone.[1] Her theories of sanitation were confirmed by the record of the hut-hospital of Renkioi nearby, for equivalent soldier-patients. This was a hospital complex, ultimately intended for 3,000 men, of cheaply prefabricated, carefully ventilated barracks buildings for 50 men apiece—designed by an engineer sent out from England, and erected without basements on a properly drained and sandy shore. Renkioi was, and was intended to be, the opposite of the barracks hospital. The war's end prevented an absolute comparison, but of 1331 patients treated at Renkioi, 50 died.[2]

The best hospital Florence Nightingale ever saw, she said, and she had visited many, was the Lariboisière in Paris, completed in 1854 according to a plan evolved with great care some three-quarters of a century earlier by pre-Revolutionary French experts (Fig. 2). It provided for the subdivision of

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[1] Cecil Woodham-Smith, *Florence Nightingale* (New York: McGraw Hill, 1951), pp. 178, 180.

[2] Isambard Brunel, *Life of Isambard Kingdom Brunel* (London: Longmans Green, 1870), pp. 471-73.

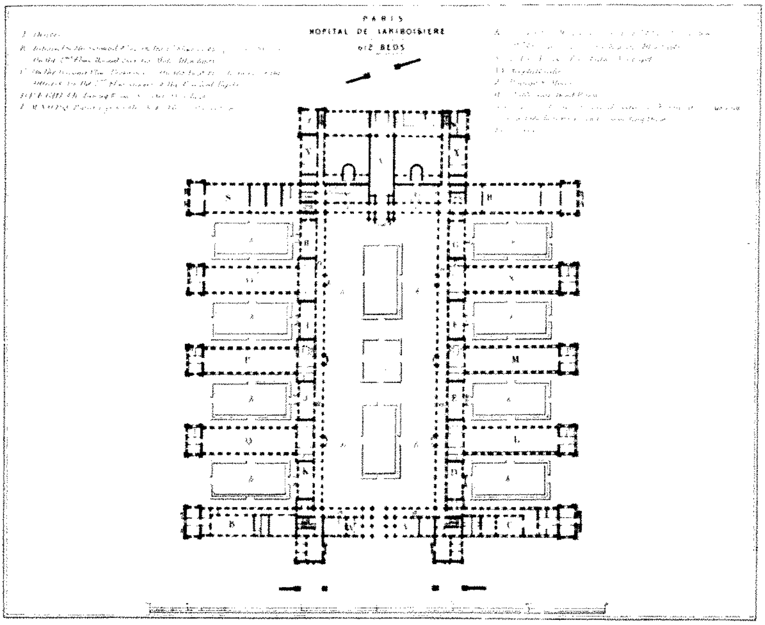

Fig. 2. Plan of the Hôpital de Lariboisière, from Florence Nightingale, *Notes on Hospitals*, third edition (London: Longmans, Green, 1863), p.100.

patients in separate pavilions, and for open wards of 32 beds each—as many patients, Miss Nightingale thought, as could effectively be supervised by one head nurse. Staircases were set outside the wards and thus could not serve to funnel infected air from one ward to another. Toilet facilities were cut off from the ward proper to minimize that source of foul air. No more than three wards were permitted one above the other, and the grassy spaces between pavilions were wide enough to allow for their thorough sunning and airing. Disappointingly, the wards of the Lariboisière actually proved to be no healthier than those of any other shape, but Florence Nightingale did not allow the statistic to pervert her vision of what a pavilion hospital could be. The problem was with the artificial ventilation, "defying the best pavilion building to ventilate its patients. To shut up your patients tight in artificially warmed air, is to bake them in a slow oven. Open the Lariboisière windows, warm it with open fires, drain it properly, and it will be one of the finest hospitals in the world."[3] Other hospitals were already built or being built in France and Belgium on the Lariboisière plan, in fact pavilions with a central courtyard were the coming shape in hospital design.

[3] Florence Nightingale, *Notes on Hospitals*, 3rd ed. (London: Longmans Green, 1863), p. 16.

Before going further into Miss Nightingale's own ideas of ward design, the point must be stressed that none of them *were* her own, that is, original with her. Her great contribution was to take ideas of others which she had tested and forcefully, prolifically, indefatigably to publicize them. To this end she carefully applied the power she acquired as a legend, "the Lady with the Lamp."

Take for example the matter of ward ventilation, to which she devoted countless pages. Wards by their very nature *smell*, of perspiration, urine and feces, vomit and sick breath, to mention just human products. A powerful motive for letting in fresh air had been forever present. To consider a few French solutions: twelfth-century monastic infirmaries were oblong halls with a row of opposite windows on the long walls for cross-ventilation, and their privies were often relegated to a separate building over a running stream. The infirmary of the Abbey of Ourscamp (1210) had divided windows. The lower half, at human level, opened as a casement for fresh air, while the upper panes were fixed, for light alone. The late thirteenth-century open ward at Tonnerre not only had cross-ventilating large windows in the long walls, but tiny clover-shaped perforations at close intervals all over the woooden barrel vault, that communicated with a vast attic reservoir for fresh air in the space between the huge steep roof and the barrel vaulting. The ward wings of the cross-shaped hospital of Lyons (1631) were intended to be ventilated through the dome of its central chapel, while at St. Louis (1607), the infection branch of the Hôtel-Dieu of Paris, an opening was made in the vaulting of the central pavilions—into which two wards opened by wide arches—that vented through a small cupola or lantern. (The cupolas of Pennsylvania Hospital, Philadelphia (1755) were still meant to be used as ventilation devices.)[4]

Certain late eighteenth-century French plans for a hospital to replace the Hôtel-Dieu, which directly led to the Lariboisière formulation, were actual machines for ventilation. The court architect Charles François Viel proposed (1777) a ward like a wind-tunnel, an immense rectangular hall with a free draft from one narrow end to the other, cross-ventilation from opposite windows in the long walls, *and* air introduced from the cellar by ducts in the wall flooring and expelled through a row of domes in the ceiling.[5] Wards might have latrines separate from the main building—those at St. Louis were placed in sanitary towers projecting into the courtyard.

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[4] Ulrich Craemer, *Das Hospital als Bautyp des Mittelalters* (Köln, W. Kohlhammer, 1963), p. 29; Dieter Jetter, "Erwägungen beim Bau französischer Pesthäuser," *Arch. Internat. Hist. Sci.*, Sept. 1966, *76:* 252-53; Thomas G. Morton, *The History of the Pennsylvania Hospital 1751-1895* (Philadelphia, 1897), pp. 36-39.

[5] Jetter, "Frankreichs Bemühen um bessere Hospitäler," *Sudhoffs Archiv*, 1965, *49:* 157-58.

The French impulse toward designing better bigger wards was interrupted by the French Revolution. A different line of development, culminating in the huts of Renkioi, was worked out on the field of battle. John Pringle, a British army physician, concluded (1750) that the frightful campaign mortality was due less to wounds than to the diseases generated in crowded town hospitals to which the wounded were brought. Even when quartering soldiers on the countryside he preferred a peasant's barn to his house—"air more than warmth is requisite." During the American Revolutionary War, Dr. Benjamin Rush got excellent results from placing patients out under the apple trees all day long. A small, destructible "Indian Hut" was devised by the American army physician James Tilton: log walls, earthen floor, roaring fire, no chimney, smoke exiting through a central hole in the ridgepole of the roof—rude, but wonderfully effective.[6]

Florence Nightingale had a natural passion for statistics—"the sight of long columns of figures was 'perfectly reviving' to her."[7] But she was not the first nineteenth-century health reformer to recognize what might be accomplished through them. In 1828 the Frenchman Villermé had pinpointed healthful and unhealthful districts of Paris by their record of mortality, and William Farr, a British physician who had been exposed to the statistical method in France, began in 1839 to apply it to causes of death in the British Isles, demonstrating a relationship between the new manufacturing towns, poverty, and disease. (Farr became Miss Nightingale's friend and co-worker.) In her unshakable conviction that a foul environment causes disease (she never conceded the existence of germs), Miss Nightingale was joined by half the world, including such anti-contagionists as Southwood Smith, who in 1838 attributed fevers to unspeakable living conditions, and Edwin Chadwick, father of the Public Health Movement. As late as 1881 Chadwick could still publish the opinion that "the entire removal of such conditions by complete sanitation and by improved dwellings is the effectual preventive of diseases of these species, and of ordinary as well as extraordinary epidemic visitations." "Ordinary foul air epidemics," as he called them,[8] were in his opinion actually engendered by miasmas arising from putrid animal and vegetable matter. Since by clearing middens and opening windows nineteeth-century sanitarians did dramatically reduce disease and death, anti-contagionists saw no reason to doubt the miasma theory. Nor did Florence Nightingale at any time in her long life. She fought bad air in hospitals because she considered it not only the cause (as in poor men's homes) of epidemics (cholera was a prime concern), fevers (typhus and typhoid), and "declines" (TB), but was also quite clear in her mind that it led to blood poisoning in surgical cases and a disgraceful patient mortality.

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[6] John Pringle, *Observations on the Diseases of the Army*, originally published 1752, ed. Benjamin Rush (Philadelphia: Finley, 1812), pp. 91-92; John Jones, *Plain Concise Practical Remarks on the Treatment of Wounds and Fractures* (New York: Holt, 1775), Appendix, p. 18; James Tilton, *Economic Observations on Hospitals* (Wilmington: J. Wilson, 1813), pp. 48-50, including elevation and plan of the Indian Hut, which has been rebuilt in the original area in Morristown National Historical Park, New Jersey, and can be visited there.

[7] Woodham-Smith, *Florence Nightingale*, p. 227.

[8] Benjamin Ward Richardson, ed., *The Health of Nations, a Review of the Works of Edwin Chadwick*, first published 1887 (London: Dawsons, 1965), II, 243, 249.

When Miss Nightingale returned to England, a new military hospital for a thousand men had been begun at Netley. The plan reverted to European corridor plans predating the revelation of the pavilion principle (Fig. 3). All those corridors, for the interchange of infected air from one ward to the next! Those tiny wards, ventilated on one side only, by inadequate windows, facing north, and on a closed court! Those toilets between wards, breathing foul air both ways! She had pledged her troth to the needlessly dead fever patients of Scutari, and in their name she struck. If she had anything to say about it, Her Majesty's gallant soldiers, a thousand at a time, should not be exposed to a fetid—perhaps fatal—atmosphere! The Secretary of State for War, Lord Panmure, had sent her the plans of Netley as an act of mere courtesy toward a famous woman whom he found really rather delightful. She vigorously gave vent to her feelings about them. Lord Panmure was appalled.

> He felt he had accidentally released a genie from a bottle. The accumulated experience of fourteen years was suddenly put at his disposal . . . . Moreover . . . a fact which he had failed to take into account had been brought to his notice. Building had progressed so far that radical alterations were impossible.[9]

He procrastinated. She took to the public press. So did he. In the files of *The Builder* and *The Building News*, the battle still rages and the smoke of it hangs in the air.

In August 1856, *The Builder* published a detailed, non-committal description of the Royal Victoria Hospital at Netley with a large plan, promising in a later number to treat the arrangement of hospitals in general, with especial regard to the plans of some abroad. That month, Miss Nightingale returned from the Crimea. By September 20, *The Builder* is expressing serious misgivings about the placement of latrines between sick wards at Netley. "It may

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[9] Woodham-Smith, *Florence Nightingale*, p. 192. Lord Panmure was described as having "an enormous head, crowned with thick upstanding tufts of hair, and a habit of swaying it slowly from side to side which had earned him the nickname of 'the Bison.' Detail he hated, nor did he appreciate system. His position as Secretary of State for War involved an immense amount of work which, as Sidney Herbert said, he 'found easy through the simple process of never attempting to do it.' He detested bothers . . . ." *Ibid.*, p. 186.

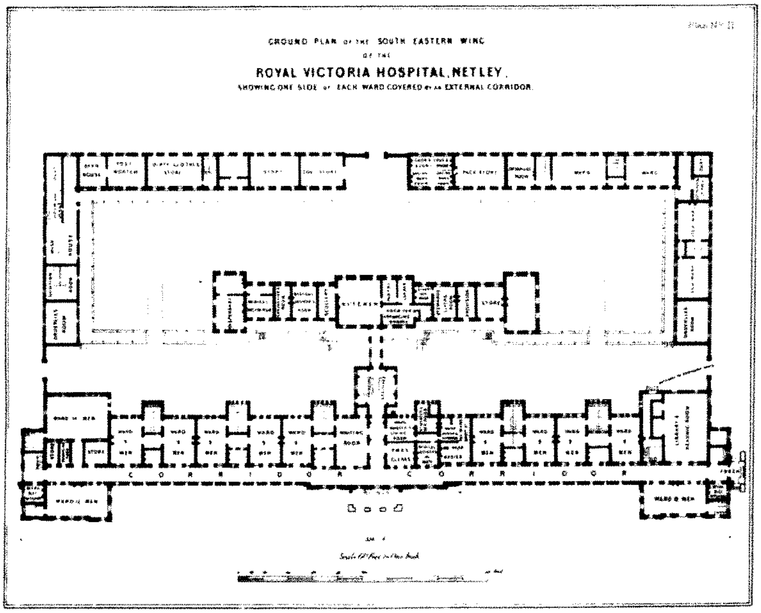
GROUND PLAN OF THE SOUTH EASTERN WING
OF THE
ROYAL VICTORIA HOSPITAL, NETLEY.
SHOWING ONE SIDE OF EACH WARD COVERED BY AN EXTERNAL CORRIDOR.
C O R R I D O R
C O R R I D O R
KITCHEN
WARD
PACK STORE
STORE

Fig. 3. Plan of one wing of Netley Hospital, from Nightingale, *Notes on Hospitals,* p. 36.

not be too late to remedy this. Should the proposed arrangement be carried out, whenever this hospital shall be full of patients, more disease will be generated there than cured.'' Thereafter, *The Builder* exclaimed, We told you so! at frequent intervals.

On October 5, 1856, Lord Panmure agreed to meet with Florence Nightingale. And *The Builder* of the previous day categorically affirmed that ''the arrangement of the wards in the Victoria Hospital is bad, beyond the power of artificial ventilation to mend. Hospital wards ought to be independent of each other, and independent of artificial means of ventilation.'' All winter, Miss Nightingale dickered with Lord Panmure for a Royal Commission, to examine scientifically and for the first time the living conditions of the private soldier in peace and war, in health and sickness, its membership to consist of as many of Florence Nightingale's men as she could persuade Panmure to include. On July 24, 1857, *The Builder* reported that the Sanitary Commission had adopted the pavilion principle as the only safe one for hospitals.

''Others have now discovered, somewhat late, the fatal errors in the plan of the Victoria Hospital, which were pointed out by us, unwillingly, but with a strong sense of duty, in the autumn of last year,'' gloated *The Builder* (June 13, 1857), and it reprinted what the *British Medical Journal* of May 30 had to say about Netley:

> This imposing building, calculated to hold one thousand patients, having just emerged from the ground to a sufficient height to show its outlines, and having absorbed 70,000 pounds of public money, is stopped by order of Government, and now stands in the open day a conspicuous engineering blunder, calculated "to point a moral and adorn a tale" to all those who believe in the efficiency of our army medical government.

The Army Medical Department had a chance to present its case in nearly three columns of fine print in *The Building News* of August 14, 1857, describing the painstaking search conducted by military doctors, in conjunction with the Director of the Geological Survey of Great Britain, for the absolutely perfect site for a great military hospital—sandy, well-drained, with water of excellent quality, so near a harbor that patients might gently be conveyed thither by boat. This they had found near Netley Abbey. Anxious consideration had been given to the mud appearing at Netley at low tide. It did then give off a slight smell, but a family living on a houseboat permanently embedded in the mud appeared perfectly healthy, "particularly the children."

It is reported that the pavilion principle *had* been proposed for Netley and considered seriously. But for so large an establishment, pavilions are prohibitively expensive, not only to build but

> if the division be carried too far, the additional cost becomes enormous, and the numbers of nurses, orderlies, and other attendants, must be greatly increased, in order to provide efficiently for the services of an establishment so widely scattered.

Ten pavilions were declared the absolute practicable limit. Now in a hospital for 1,000 patients, ten detached buildings no more than three stories high, as in France, must necessarily have 32-bed wards. Thus by a process of division these researchers arrived at the number of patients per ward favored by Florence Nightingale when she conceived of a hospital as a multiplication of wards of the optimum size to be supervised by one head nurse. This number of beds per ward was submitted to the Director General of the Army Medical Department. His response, like that of every army surgeon consulted, was that "it would be difficult, if not impossible, to maintain the proper discipline in a ward containing so many sick soldiers." The average number of beds in a ward should not exceed ten. On these grounds, plans for a pavilion hospital were scrapped and the present arrangement was unanimously adopted by a long list of titled medical gentlemen, and approved by the Queen.

So far so good. But what happened then? A group of doctors, all from Middlesex Hospital, presented a memorial strongly objecting to the proposed ward arrangements at Netley. The wards were too small; "experience has well shown that in a ward which is very high in proportion to its breadth there occurs a stagnation of air which it is almost impossible to overcome." As for their windows giving on the one side upon a connecting closed corridor, and on the other facing northeast into a closed courtyard, "nothing could be more obstructive of ventilation and comfort." Do not think to depend on artificial ventilation: "In a new hospital, where there is a choice of construction, the ventilation should be entirely natural, and everything like artificial ventilation, which is always imperfect and precarious in its operation, should be avoided." The memorialists politely suggest that "the entire absence of good military hospitals in this country renders the opinion of military medical officers less valuable than it would otherwise be." Lord Panmure subsequently recalled the Committee, adding to it Dr. Sutherland (a close friend of Miss Nightingale), and a compromise was worked out: existing plans for Netley would not be abandoned, but would be modified as far as possible. *The Building News* sums it up: "The great Military Hospital is to be built at Netley, more for the sake of ornamenting the site than of conducing to the convalescence and comfort of the invalided guardians of our empire."

One week later, *The Building News* reports a debate in the House of Commons during which the plans for Netley were again denounced in the strongest terms. The mouthpieces are masculine and go by the names of Mr. Stafford and Mr. Tite, but the voice is that of one woman:

> The soldiers were thrown too closely together in them; were too much affected by each other's state of health, and depressed by a death; while they wanted that variety and incident which were afforded when a larger number were assembled together. Again, the influence of female nurses was less felt in small wards, and their trouble in visiting was much greater.

The Honorable Member for Northamptonshire added that "the highest possible authority on this point assured him that the plan on which Netley Hospital was being built was of a nature to render inspection difficult and nursing impossible."

Adjustments were made in the plans. Windows were enlarged, a floor for female nurses was added to the central building. Lavatories and baths were multiplied until it was estimated that they were almost numerous enough to accommodate half the patients at one time *(Building News*, Oct. 21, 1859). The connecting corridor, originally an arcade but closed up by order of a medical officer, who feared excessive glare from so much sunlight, and great and sudden vicissitudes of temperature, was opened up again. Artificial ventilation was installed—pipes under the floors, open to the outside air and rising within the wards to a height of six feet, where the vent, over the heads of the patients lying in bed, was covered by a grating beyond the reach of patient manipulation. Or so it was hoped. The designers forgot that cold air does not rise or sweep straight across a room, but falls, and this air fell in a torrent on the head of the closest patients. Whereupon the patients rose and pasted squares of paper over the grating *(Building News,* Dec. 13, 1861).

In the summer of 1858, the first of Florence Nightingale's anonymous articles on hospital construction, that were later to form her "Notes on Hospitals," appeared in *The Builder.* And Lord Panmure and the military establishment found a new, politically influenced, short-tempered apologist. In *The Building News* of August 13, 1858, he let fly on the subject of Netley Hospital, "building news par excellence." He reviewed the care that went into its location, the inquiries into site, climate, soil, the knowledge brought to bear upon the subjects of "geology, natural philosophy, and the whole chemistry of creation. . . . And yet," he continued, "and yet—such are the difficulties the powers that be have too often to contend with under free institutions!—no more than a few weeks ago, it was a very doubtful question indeed whether Netley Hospital was ever to be built! It was as nearly as possible sentenced to condemnation, through special pleading, and what we must reluctantly designate as very hard swearing." Fortunately, however, this time General Peel refused to be bullied into sending the matter once more into committee, where it would have died, and the hospital with it.

Thus did the military finally get construction going again at Netley, but Florence Nightingale had the last word. By the summer of 1859, *Lancet* was republishing the substance of *Notes on Hospitals* and comparing the Lariboisière with Netley Hospital which it termed, in Miss Nightingale's own language, "a perfect rabble of wards and offices, thrown together as if by accident." On October 21, 1859, *The Building News* returned to the fray, on the other side of the fence. It had discovered how much Netley Hospital had cost, was costing, and would cost. New ground had to be bought to connect patients arriving by boat with the hospital. Twelve hundred yards of black mud, even so, must be traversed by every arriving soldier, and "despite the evidence collected of the non-existence of effluvia from the mud, and on the other hand of the peculiar healthiness of the effluvia, there can be no doubt that the mud bank must be reclaimed from the water before a single man can be sent into the hospital." An impermeable wall was needed, and pumping machinery. The main sewer of the hospital would cost 8,000 pounds extra, for apparently no provision had been made for so important an item as sewerage. The most recent cost estimate worked out to 500 pounds a head, or more than the cost of a moderate sized house, even in London. The augumentation was excused by those in charge as necessary owing to certain alterations and improvements that had been made to the plans during the past year. *The Building News* dismisses this. "Bricks and mortar are dangerous things for men to meddle with who do not get their living by them, and more especially for governments and corporate bodies, for no man can ever calculate the ultimate cost." If, indeed, the hospital would ever be completed. It must still be furnished, "and what that will cost it is impossible for the most reckless to imagine."

> Netley hospital . . . will be permanently there, for it is rapidly growing into an institution. We are not sure that it has not already become part of our Constitution. . . . The secret has been learned how to quarter oneself and family on the nation, and secure a comfortable independence for life. Netley is situated in one of the pleasantest counties of England, on the borders of our only forest, and no doubt all parties concerned look forward to spending there the remainder of their days comfortably and quietly. . . . Wealthy families will trace their source of greatness to their ancestor having been a hodman at Netley, and Mr. Myers will be venerated in all Israel for having rebuilt Jerusalem with the profits of the job.

The next great military hospital undertaken by the nation was Herbert Hospital at Woolwich. It was designed in pavilion form, which *The Builder* hailed as "a practical embodiment of the principles which, after so much controversy, we are fairly entitled to call the fixed principles which should influence hospital construction" (by September 3, 1859!). Having tried the arrangements of existing structures by "absolute physiological laws," *The Builder* believed that "we are now . . . in a position to say that we know all the rules which should guide us in respect of the great primary points of site, plan, and interior arrangements," the only variable being their adaptation to special requirements. At Herbert Hospital the central courtyard of the French prototype was done away with and the English expedient substituted of pavilions depending from both sides of a central corridor. Resentment was still active against the pavilion axiom; on February 11, 1865, *The Builder* published a report that Herbert Hospital was showing "alarming symptoms of subsidence," but the following month, on examining the actual damage, its correspondent found only minor cracks in two or three bays and some joints of the window arches opened.

It was thought especially significant that the pavilion principle was to be used in the new St. Thomas' Hospital, its first application in London and to an English civil, voluntary hospital. A voluntary hospital was one where patients paid nothing for their care, which was made possible by charitable donations. Patients were paupers, or nearly so; the rich were nursed at home. But beneficent donors who paid to make it possible for a poor man to enter hospital owed it to him not to kill him there. It was beginning to be suspected that a sick man or woman had a better chance to recover from whatever ailment in the most wretched hovel or even in the open air under a hedge, than in the best-appointed hospital. How awesome, then, the responsibility confided to a hospital designer!

> Imagine an architect at 30 rebuilding a hospital of only sufficient capacity to accommodate 100 patients per annum. What a subject of recollection to him at the age of 70 to think of 40 human lives saved and 4,000 weeks, or more than 75 years, of human suffering saved through his instrumentality. On other other hand, if by carelessness and ignorance he had failed in his hospital what a large number of human lives had been lost in his lifetime only by his fault (*Building News*, May 1, 1868).

St. Thomas', second only in age to St. Bartholomew's among London hospitals, had been located in Southwark on one site since 1215. It was dispossessed by the Charing Cross Railway, and during an exhaustive search some 44 possible new locations were considered. Miss Nightingale was all for moving the hospital lock, stock, and barrel out into the country. If one sets an abundance of fresh air above all other requirements for a hospital, the idea is appealing; or as *The Builder* of February 11, 1860, put it:

> Excepting in the interest of details of convenience and expense, there can be nothing but sympathy with the proposal. One can quite understand that if St. Thomas's Hospital, for instance, were moved along the South-Eastern line to some breezy upland down in Kent or Sussex, it would be a very great sanitary advantage.

For the sake of the poor patients who must be brought to the hospital, of their kin who visit them, and of the physicians and surgeons in attendance upon them, a more convenient location was chosen: eight and half acres facing the Houses of Parliament, half the acreage to be reclaimed from the river. Critics called it a mud bank. But it was admitted that the river did keep surrounding construction at a distance and bring in a generous sweep of free air. The long narrow site made a Continental courtyard impossible; once again pavilions were strung out along a central corridor.

The first aspect of the new hospital to stir the imagination of contemporaries was its size—dimensions both of width and height which were a product of inexorable multiplication. Wards were 120 feet long by 28 feet wide by 15 or 16 feet high. More than 30 feet between opposite windows would, in Miss Nightingale's opinion, impair the cross-ventilation. The length was determined by the number of beds—28—and the height needed to give each patient 1,900 cubic feet of air, a reasonable average. (In *Notes on Hospitals* [third edition, 1863, p. 14] Florence Nightingale says that "in Paris 1700, and in London 2000 and even 2500 cubic feet are now thought advisable.") The ground floor was used for services and above this three wards were piled one on top of the other, with an attic for servants over all. If buildings of this height were not to lie one in the shadow of the next, cutting off each others' sunlight and air, the courts between pavilions had to be 125 feet wide, and the central court for the church was made a full 200 feet wide. The resulting length of the hospital, including out-buildings and a medical school, added up to a quarter of a mile. An American visitor having tea on the terrace of the Houses of Parliament opposite was moved to inquire, "Are those the mansions of your aristocracy?"[10] A working man wrote in to *The Builder* that he hoped it would give no offense if the likes of him gave vent to his wonder at the "seven noble mansions" of St. Thomas', "incomprehensible and incredible" in extent and height. His letter was printed (Sept. 3, 1870) in the very tiniest print available.

Lancet did mildly comment (Oct. 22, 1870) on how long it might take one to travel from here to there:

> The principal feature of the place . . . is its astounding bigness . . . . We are informed that a system of electric communication will be established throughout the building; but, although this will annihilate time in the diffusion of intelligence, it can do nothing to diminish the space over which students will have to travel prior to their convergence upon the point of momentary interest.

Bigness was a hallmark of the day. A prosperous British middle class rejoiced in concert halls, hippodromes, railway stations and hotels, and the staggering Crystal Palace.

The architect of St. Thomas', Henry Currey, adopted an Italianate skin for Miss Nightingale's spacious sanitary concepts, harking back to a time and place—Renaissance Italy—when this style was, as in Victorian England, a direct expression of new commercial wealth,[11] an architecture, in Ruskin's words, "raised by a mercantile community, for civil uses, and domestic magnificence."[12] More to the point, since publication of *The Stones of Venice*, Italianate architecture was the rage in Britain. Thus the style of St. Thomas' was no more innovative than was its pavilion form.

Italianate arcades ornamented the balconies at the narrow river end of each ward (Fig. 4). The free-standing arcades demanded by Italian prototypes were being reproduced or simulated even upon warehouse fronts;[13] how much more appropriate were they where a balcony was needed for patients to take the air! All-arcaded fronts tend, architecturally, to produce a weak corner—a

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[10] Edward Cook, *The Life of Florence Nightingale* (New York: Macmillan, 1942), I, 427.

[11] Henry-Russell Hitchcock, *Early Victorian Architecture in Britain* (New Haven: Yale University Press, 1954), I, 396-97.

[12] *Stones of Venice*, I, 10, in E. T. Cook and Alexander Wedderburn, *The Works of John Ruskin* (London: George Allen, 1904).

[13] Henry-Russell Hitchcock, "Victorian monuments of commerce," *The Architectural Review*, Feb. 1949, p. 66.

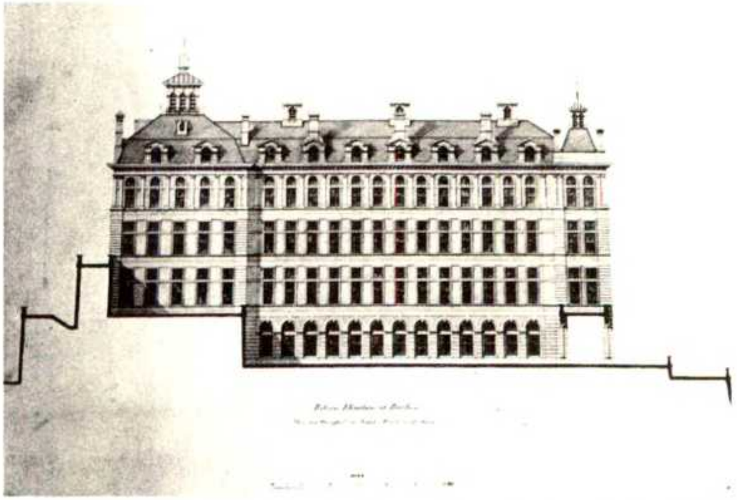

Fig. 4. Elevation of two pavilions as seen from the river. Original plan by Henry Currey. Courtesy of St. Thomas' Hospital.

flaw automatically avoided at St. Thomas' by sturdy sanitary towers for baths, lavatories, and water closets at either end of the balcony. From St. Thomas' sinks can be had one of the finest views in London.

The wards were carried out over the river on an immense cement substructure, 22 feet deep, resting at the river end on piers and arches of Portland cement concrete that went down 50 feet to the river clay. The entire length of the side walls was bolstered up by a cement foundation of the same depth and 10 feet wide on either side. Since land or spring water stood at a level of 4 feet above the clay, the excavation had to be pumped dry before concrete was poured in. Embankment alone cost 90,000 pounds, cost of foundations must be added to that. The job was done with such exquisite care that the architect—remembering Herbert Hospital—was able to report at the opening *(Building News,* Jan. 27, 1871) that he had not been able to discover the slightest settlement over the whole area of the extensive building.

Only in the chapel did Mr. Currey permit himself the use and expense of real stone—partly for the satisfaction of it, partly to conceal ventilation flues led over the stone-ribbed aisles from the one-storeyed service buildings located between ward pavilions. Thence they ran up the piers of clerestory walls and along the main roof. Otherwise vents would have cropped up objectionably amid the balustrading which was the architect's pride and joy. He used Ransome's concrete, almost indistinguishable from Portland stone and infinitely cheaper, to form in molds an endless number of consoles, column caps, pilasters, balusters, and the urns and terminals for the balustrading. "Had it not been for this useful material," he reported, "I should probably have had to be content with long lines of balustrading, unbroken by any vase or terminal" *(Building News,* Jan. 22, 1871).

Not everyone agreed with him about the urns. It was suggested that they seemed to be waiting for the ashes of the patients within.[14] *The Building News* took Mr. Currey rather sharply to task: "Had we dared we should have told Mr. Currey, when describing his gratitude to Mr. Ransome . . . for enabling him, by the cheapness of his artificial stone, to garnish his St. Thomas's Hospital with some hundred of mock-pots, that we would that the Chancellor of Exchequer would levy a prohibitive tax upon such useless monstrosities." *The Athenaeum,* while seeing no reason to doubt the excellence of the system, deplored the pretensions of this vast series of buildings "to what is so oddly called 'an ornamental character' . . . . Looking, then, at the new structure, as designed to be 'ornamental,' though not architectural, we regret that much money has been wasted, utterly thrown away, in 'enriching' a building which otherwise might have been like a collection of brick boxes with holes in them, dull and monotonous, but would have been free from vulgarity and unmarked by ill-supported pretence" *(Building News,* June 20, 1871).

"The system," however, that is to say the wards, were and are the glory of this hospital (Fig. 5). They have come down to us almost unchanged, and so solid from floor to ceiling it took a direct bombing hit during World War II to disturb them. (One pavilion was rendered useless, another partially destroyed, and the concrete foundations of others were finally cracked.)

The ward floors were the work of master craftsmen. Florence Nightingale had decreed:

> The best ward flooring is oak. No sawdust nor other organic matter, capable of rotting, should be placed underneath hospital floors. The joints of the flooring should be well fitted together, so as to be impervious. Floors should be beeswaxed, or oiled and polished *(The Builder,* Sept. 25, 1858).

At St. Thomas' the floors were of solid wainscot oak, "fitted together with the accuracy of a piece of cabinet work . . . tongued with hoop-iron, the nail holes stopped with coloured putty, and prepared for waxing and polishing" *(Building News,* Feb. 3, 1871).

Ward walls were lined with Parian cement, washable, non-absorbent, polished bright as marble. In earlier hospitals, walls were periodically

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[14] Cook, *Florence Nightingale,* I, 427.

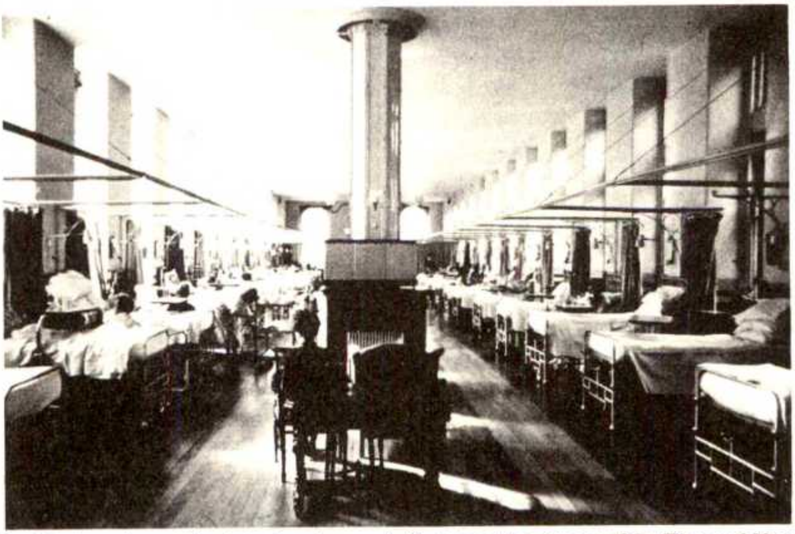

Fig. 5. Modern view of the interior of a ward. Photograph courtesy of St. Thomas' Hospital.

whitewashed, as it was believed that lime acts as a preservative against infection. But whitewash cannot be cleaned, only removed and renewed, involving risk to workmen and to patients in other parts of the hospital. Ordinary cement, said Miss Nightingale, being grey-colored never looks clean, gives the ward a sombre appearance, and hides dirt. Tiles are bright and hard enough, but have joints which harbor vermin. The Parian, avoiding these defects, presented two others: non-absorbent, it did not absorb condensation, which trickled down the surfaces; and if not tinted, it was a glaring white. Since, until recently, a "sanitary" hospital has been thought of as an "all white" hospital, it is interesting to learn what color the walls of St. Thomas' were originally intended to be. Miss Nightingale recommended "the palest possible pink," and in 1863 Aylesbury Infirmary obediently sported "ward walls of a delicate rose colour, which is cheerful to the eye" (*Lancet*, Dec. 26, 1863). *Lancet*, a few months before the opening of St. Thomas', remarked of its ward walls that "the parian has dried to a fine warm tint, a little paler than that of red blotting paper" (Oct. 22, 1870). But Parian did not absorb color either and it came out "varied and patchy"—a defect which, it was hoped, would be concealed by painting the walls in distemper (*Lancet*, June 10, 1871).

The effect of long side-walls half composed of windows was described as wonderfully fine. Here again the happy result admired by *Lancet* was a mere by-product of the system.

> Between every two beds, on both sides there is a window, and all these windows are recessed so much that, whilst standing at one end of the ward, the glass of all but the two or three nearest is concealed. The result is that there is literally no barren reach of dead wall before the patients but a series of projections and recesses, presenting variations of light and shade, and utterly destroying the monotony of surface that renders so many ward walls sources of weariness to the flesh (Oct. 22, 1870).

The windows were constructed in three sections, the lower two opening in the usual way, the upper third acting as a transom, to clear foul air collecting overhead. For this reason they rose to within a foot of the ceiling. Windows and the greater part of the doors were made in Sweden. Mr. Currey sent an assistant there on purpose to inspect the factory (*Building News*, Feb. 3, 1871). The windows magnificently fulfilled Florence Nightingale's proportions of window space to wall of not much less than one to two, but did not pass without adverse comment. "The glass and glare principle," it was called; a patient staring at an opposite wall would know what that meant. The Earl of Dalhousie termed these windows absolute cruelty to invalids, the first anxiety in illness being to relieve the brain and eyes from too much light. "If intended for a flower-show, or a museum, the building would have been admirable, whilst for its present destination it was absurd" *(Builder,* March 18, 1869).

At night, or on rainy winter days, no such problem existed. A hospital architect, asked in 1868 about the amount of gasfitting required in a hospital, replied not very much, one or two shaded gaslights for the head nurse, lamps and candles to be used by the other nurses *(Building News,* May 1, 1868).

The primary concern of the designers of St. Thomas' was with its artificial ventilation. The Lariboisière owed its high death rate to a faulty system of artificial ventilation. Actually, two systems were in operation simultaneously—propulsion on one side of the hospital, extraction on the other. Propulsion seemed to bring in almost three times as much air, but was also more than twice as expensive,[15] and neither principle checked infection. First and last there was not a system of artificial ventilation the French had not tried out somewhere, they were becoming quite jaded on the topic. Miss Nightingale, who kept abreast of hospital developments, favored keeping windows open; she would rather have a frozen patient than one with blood poisoning. Patients preferred to die. If they could shut a window or an aperture for outside air, they would and did.

Chadwick reports a method of involuntary airing introduced (1831) into a complex of workers' dwellings in Glasgow, in which some 500 families lived, one family to a room. The inmates positively refused to ventilate the rooms, so

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[15] Henry C. Burdett, *Hospitals and Asylums of the World* (London: Churchill, 1893), IV, 45.

> the proprietors of the works, on the recommendation of Mr. Fleming, a surgeon of the district, fixed a simple tin tube of two inches in diameter into the ceiling of each room, and these tubes led into one general tube, the extremity of which was inserted into the chimney of the factory furnace. By the perpetual draught thus produced upon the atmosphere of each room the inmates were compelled, whether they would or not, to breathe pure air. The effect was that, during the ensuing eight years, fever was scarcely known in the place.

"The process was apparently defective," Chadwick concludes, "only in not providing for the appropriate warmth of the air introduced."[16]

Ventilation of "most" London hospitals in 1837 was described by Dr. John C. Warren, surgeon of the Massachusetts General Hospital, writing home. There were large tubes communicating with the external air, "from which branches are carried to the different apartments and introduced into these apartments at convenient places by a multitude of *very small* apertures, so that the air is received without any inconvenient blast. The air of the room is conveyed away by apertures larger than the first, all of which terminate in the chimney by metal tubes."[17] In addition, one fireplace was kept burning all summer. Nineteenth-century ventilation schemes ultimately depend on the power of a central furnace or an open fire to suck bad air out of a room and fresh air into it through the cracks around windows and doors.

The much more sophisticated ventilation devices of the ward at St. Thomas' cannot be seen in the interior unless one knows where to look, but on the outside they are clear enough (Fig. 6). Copious ventilation required by the pavilion principle made for a varied roof line. There were three exit systems for vitiated air (as well as for smoke from the heating system). The first is the large turret to the left, or east, on the Lambeth Palace Road side. It rose over the stairwell. The second is represented by three chimneys over the three stoves placed down the center line of each ward, with pipes leading straight up through the roof. The third is contained within the two turrets for the sanitary facilities, on the river front. These three systems were completely separate one from another.

The chief wind-tunnel was the stairwell. Currey describes it thus:

> The main extraction shaft is carried up in the well-hole of the staircases, and in this is placed the smoke-flue from the boiler, consisting of a wrought iron tube 15 in. in diameter. . . . In the upper part of this shaft are also placed the hot water cistern, and if

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[16] *Health of Nations*, II, 57.

[17] Frederic A. Washburn, *The Massachusetts General Hospital* (Boston: Houghton Mifflin, 1939), p. 547.

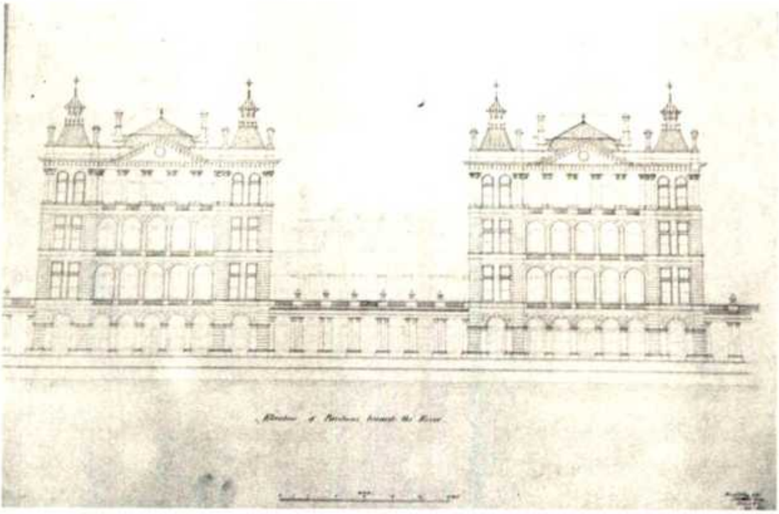

Fig. 6. Side elevation of one ward. Original plan.

> found necessary, hot water coils will be added to assist the rarefaction (*Building News*, Feb. 3, 1871).

Into this main shaft, air was vented from the low buildings between pavilions.

Originally it was intended that the three open fireplaces in the ward should only be used for heat, but the capacity of the open fire to draw fresh air into the room was irresistible. An outer air tube round the flue of each fireplace would carry off some considerable part of the vitiated air beyond what goes up the chimney with the smoke (*Building News*, May 1, 1868). Its outer casing was cast iron, put up in pieces and bolted together so as to be easily removable if the smoke tubes needed repairing. The casing also acted as insulation so the hot metal of the inner shaft did not come in contact with the ward atmosphere. Henry Currey explained that chimneys and ventilation shafts could not be hidden within the side walls of the wards because, as it was, there was scarcely enough solid wall left between windows to support the building (*Building News*, Feb. 3, 1871). The lower surface of the cap of the outer air tube was perforated, to collect still more vitiated air from near the ceiling.

Between the ceiling of one ward and the floor of the ward above it, Dennett arching was incorporated, a cheap strong cement construction for fireproofing. Currey estimated that he had used about 337,000 feet of it in "floors and flats" (*Builder*, Feb 4, 1871). The arching was left visible in the basement and can be seen today in ceilings there (as also, incidentally, in the ceiling of the chapel of the Rudolfspital, Vienna, 1864). The arching was also enlisted to carry air tubes. Fresh air was introduced into the wards by means of "zinc tubes laid between the Dennett arching and the floor boards communicating with the stoves and hot-water coils, thus passing over a cool surface in summer, and tempered in winter by contact with the heated surfaces before entering the wards, the whole admitting of regulation by valves. Each pavilion has its independent means of warming and ventilating," Mr. Currey continues, and when asked whether there was anything to prevent foul air from one ward getting into another, he replied that he did not think such an occurrence possible.

Nor is this the end of the air extraction mechanism of the wards. There were also four foul air extraction flues which met in the roofs. A coil of hot water pipes near the outlet of the flues (part of the hot water supply, and therefore always at work) kept the air moving.

A third major air-extraction system worked through the turrets over the bathrooms and w.c.'s at the far ends of the wards, and contained, also, vents for the foul linen and dust chutes. It was entirely independent of the stairwell system and the ward system. Bathrooms and toilets, it must be remembered, were already separated from the ward proper by a sizeable corridor with windows to either side, so that no bad air from either turret could enter the ward. *Lancet* misunderstood the principle (it should have known better):

> On either side are two noble looking turrets. Of these, one is appropriated for a bath room and lavatory, and the other for a watercloset and scullery. These rooms are 15 ft. square and 17 ft. high, and they are provided with seven splendid windows. The provision is palatial, and altogether beyond the requirements of twenty eight patients. We would venture to suggest the propriety of putting all these arrangements into one apartment, and of converting the southern turret—which, from its exposure to the sun on every side, is most unfitted for the reception of water closets—into what would be a most cheerful library and day-room (Feb. 12, 1870)

Lancet had not kept up with the times. Now, the times having passed beyond Miss Nightingale's palatial sanitary arrangements, it is significant that a major reason for abandoning the Nightingale Ward has been too few toilets and sinks, and those too far away. In the left-hand turret at St. Thomas', on each floor, are now three toilet cubicles for the use of 28 patients; in the right-hand one, two sinks, a bathtub, and a shower, all uncubicled. What our heroine did not foresee was an ambulatory patient population.

Misplacement of the view was another criticism. What was said of the Herbert Hospital in 1860 applies equally well at St. Thomas' today:

> At the new Marine Hospital at Woolwich a patient who looks out of any ward window proper will see nothing but another sick marine in the opposite pavilion, like himself vainly trying to obtain a distant view. If our sick marine in search of the picturesque perseveres, he will be rewarded by a very glorious landscape, but to enjoy that he must

go the end window, and perch himself on the washhand-basins, with the water closets on one side and a sink on the other (*The Builder*, Sept. 22, 1860).

As one examines St. Thomas' closely, whether inside—the ward ventilation mechanism—or outside—the plaster pots along the balustrades—it justifies the concern of one contemporary architect that hospitals were becoming too elaborate. He however immediately added that great elaboration was the spirit of the times and it would not do to run counter to it (*Building News*, May 1, 1868). Since no expense or effort was spared to make St. Thomas' the best hospital as its age defined the best, it is not surprising that *Lancet* hailed it as "one of the finest hospitals in the world, as well as an architectural beauty worthy of the metropolis" (Jan. 28, 1871). *The Building News* (May 16, 1868) supposed that when completed, the New St. Thomas' would be the nearest approach to a perfect building of its kind. Such expectations flourish whenever a new building is erected where no expense was spared. They shimmer in the air at the cornerstone-laying, which at St. Thomas' took place inside a pavilion all of crimson, with a Persian carpet on the dais, a throne on the carpet, a blue canopy over the throne, a gilt crown over that, flowers banked around the arena and Queen Victoria wielding a trowel wrought for the occasion with a handle "of carved rock crystal, inlaid with scrolls of gold and turquoises, surmounted by the Imperial Crown, in chased gold, set with precious stones, the arched diadems being jewelled with pearls. The blade is silver, with elaborately engraved and gilt arabesques of Italian ornament" (*Builder*, May 16, 1868). Beautiful sentiments may persist even unto the opening ceremonies. On January 23, 1871, Mr. Currey met with his peers of the profession and the Press. He was congratulated on the satisfactory conclusion of as perfect a monument as the new hospital might fairly be considered (hear, hear!), the profession generally was congratulated on the liberality with which the Governors of the Hospital had enabled their architect to carry out the work (hear, hear!) and it was said that there was every reason to believe that the new hospital might be kept as wholesome for all time as any building of its kind could possibly be (*Building News*, Feb. 3, 1871). Mr. Currey responded with a courteous double negative:

> Whatever may be the architectural merits or defects of the building, the magnitude of the structure, and the important position it occupies, renders it perhaps not altogether an unfit subject to be recorded; at all events, you will all agree with me in the expression of a hope that it may be effectual in alleviating the sufferings of the poor, and in advancing the noble art of medicine and surgery.

He had little enough time to savor his achievement. Within two weeks of the opening, the hospital was appealing for funds. *Lancet* was scandalized.

> When we read in the daily journals of Thursday, the 22nd of June, the account of the ceremonial of the so-called opening on the previous day of the Royal Hospital of St. Thomas by her Majesty, we little anticipated that on that day fortnight, the 6th of July, we should find an appeal in the advertisement sheet of the leading daily journal to the pockets of the public in behalf of this Royal but pauper charity! . . . We find an announcement of a festival dinner . . . with the view of producing the funds, without which not a single patient will reap the benefit of an expenditure of half a million in what we cannot but characterise as reckless extravagance (July 15, 1871).

All beautiful objects have their price tag. Mr. Currey was not unaware of the fact and in his final report he juggled figures to prove that although, if one were to include the foundations and the fittings, the cost of St. Thomas' would come to 650 pounds a bed exclusive of the site, "which, in the absence of any detailed explanation, appears to be a large sum"—in fact it was 150 pounds per bed more than the figure for Netley released to a shocked public 12 years earlier—if, however, one fairly excluded the costs of concrete foundations and of enclosing 8½ acres with stone curb and iron railing and parapet walls, and the costs of the medical school building, nurses' training building, administrative offices and residences and an extensive outpatient department, a bed in the ward proper—that alone being considered—came to only 250 pounds, which did not appear to him to be excessive.

Unfortunately for St. Thomas', it was conceived in an expansive era but opened its doors just as that era came to an end. Sir Nikolaus Pevsner has pointed out[18] that the thirty to forty years before 1870 were the greatest period of prosperity Britain ever had, during which she produced half the world's iron and coal and carried half the world's shipping, and railways all over the world were built with British money and expertise. In 1871, the very year St. Thomas' was opened, Germany, Italy and the United States all were united within themselves after years of internal warfare, and Britain could not retain the monopoly. Great private mansions were no longer built in Britain after that, says Sir Nikolaus, and though the critics of St. Thomas' were blind to the shadow of the dividing line as it fell across the very year of the opening, they did know that the wards of the seven noble mansions of St. Thomas' were mostly empty for lack of funds to furnish them. At one time there were no patients in 13 of the 21 wards. *Lancet* acidly inquired for whose benefit half a million had been spent in bricks and mortar. "When we consider that the hospital property is the heritage of the poor of London, and that every pound unwisely or unnecessarily expended is so much withdrawn from an estate which, large as it is, is all too small for poverty's demands, we feel bound to protest against such extravagant and unnecessary cost" (Feb. 12, 1870).

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[18] At a lecture at Yale University, April 25, 1971.

Such was the immediate outcome of an all-out effort on the part of architects, sanitary engineers, and that "lady whose name will always remain associated with the care of the wounded and the sick" (so Miss Nightingale was called by Queen Victoria at the opening ceremonies; *Builder,* June 24, 1871) to provide patients with—as *The Builder* put it, Feb. 4, 1860— "the first essential in the prevention or treatment of disease . . . the best and cheapest of all medicines—one which heaven bestows on us in boundless profusion—fresh air."

THE OSLER MEDAL ESSAY

THE HOSPITAL AND SOCIETY: THE GROWTH OF HOSPITALS IN ROCHESTER, NEW YORK, IN THE NINETEENTH CENTURY

DAVID B. LOVEJOY, JR.

Early 19th-century hospitals bore little resemblance to the glass and concrete structures of today. The local poorhouse often assumed the role of the hospital, for its *raison d'être* was the same as that of a hospital—to provide custodial care for the chronically ill, the poor and travellers who had no one to care for them. Respectable citizens received medical care at home, separated from the drunkards and the epidemic diseases which were the rule in hospitals.

However, hospitals evolved during the century into unique institutions for the care of the acutely ill. They dissociated themselves from the almshouses and pesthouses which had colored the public attitudes towards hospitals in the early 1800s and began to provide care without regard for social or economic status. The quality of hospital care rose, and hospitals gained the prestige and respectability they have today.

Part of this evolution can be attributed to technological advances such as the development of anesthetics, antiseptic surgery and the science of bacteriology. However, the influence of public opinion and government policies, particularly charity policy, were primarily responsible for the transformation of hospitals into modern health care institutions. The financial assistance of state and local governments facilitated the development of large numbers of private and publically operated hospitals, especially in post-Revolutionary cities such as Rochester, New York.[1]

Rochester provides a good example of the implementation of hospital policy by state and municipal governments, and its development is uniquely

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[1] Some hospitals already existed in the larger, pre-Revolutionary cities. The New York Hospital, founded in the 1770s, was chartered in 1791. This was a private institution, but it received between $2,000 and $10,000 per year from New York State, out of funds derived from New York City auction duties. The Pennsylvania Hospital of Philadelphia, a private hospital built to serve the poor, received matching state and private funding at its inception in 1751. The Massachusetts General Hospital of Boston (founded in 1821) is another private hospital which served the public, and it received matching state and private funds in 1821. Charity Hospital in New Orleans was founded in 1737 by a French sailor who left his fortune to the hospital.

BULLETIN OF THE HISTORY OF MEDICINE 49 536-555 (1975)
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accessible to the historian because Rochester newspapers are completely indexed from 1825 to the present. Rochester was typical of the fast growing cities of western New York and it will be the focus of this paper, although other cities will be mentioned to provide perspective.

Government hospital policy in the early 19th century is best understood in terms of the problem of poor relief. Charity had traditionally been a private responsibility in America, but due to increased urbanization, private funds were often inadequate and had to be augmented by municipal monies. In the late 18th century, most charity was in the form of "outdoor relief"; municipalities and private groups provided food, clothing and firewood to the local poor who then took care of themselves. This program was based on the premise that the deserving poor would become useful, productive citizens and enhance the economic and social well-being of the localities.[2]

Outdoor relief was not sufficient to meet the needs of the chronically ill or to cope with large epidemics. As early as 1717, Boston found it necessary to build a "pesthouse" to isolate paupers stricken with smallpox.[3] By 1735, the Boston workhouse had been established to provide "in-house" poor relief, but it soon was caring for both the acutely and chronically ill.

In New York State, the trend towards institutionalization of the poor grew following the Yates Report of 1823.[4] John Yates, the secretary of state, reviewed the poor laws in each of the states and in many European countries with the goal of synthesizing a workable, forward looking policy for New York State. Yates came to the conclusion that institutionalization of the poor, rather than outdoor relief, would be the most efficient way of controlling poverty, and consequently he recommended that each county maintain a poorhouse to hold the local paupers. Thus he retained the traditional goal of rehabilitation of the poor through local action while he changed the method of reaching this goal. Yates' comments on the sick poor are of particular interest:

> The expenses for physicians and nurses, in attending paupers, in towns where there are no poorhouses, form a very prominent article in the amount of taxation. Pauperism and disease, except in an almshouse, are generally found associated together.[5]

Epidemics were a very real threat in the fast growing cities where there were many people but few provisions for sanitation. Yates' almshouses promised to preserve the health of the taxpayer and save him money as well: given the state of medical practice at the time, it was likely that the purpose of the "pesthouse-almshouse" was primarily the protection of the well and only secondarily the care of the sick.

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[2] For an excellent description of poor relief in the 18th century, see: D. J. Rothman, *The Discovery of the Asylum; Social Order and Disorder in the New Republic* (Boston: Little, Brown, 1971).

[3] Commission on Hospital Care in the U. S , *Hospital Care in the U S.* (New York: Commonwealth Fund, 1947), p 434.

[4] New York, *Assembly Journal,* 1924, *1*, app. B 386-399, pp. 386-399

[5] *Ibid* , p. 395.

Each locality had its own version of poor relief and care for the sick, but the Village of Rochesterville was representative of many similar towns when the trustees established the first pesthouse in October 1823. Mr. Cunningham, a servant at John Swift's house on Sophia Street, came down with smallpox and

> Whereas it is expedient to take measures to prevent the spread of the disease . . . he was removed to the house of Mr. Cummins . . . in a behind part of the Town of Brighton which house together with a Nurse and medical attendence by Doctor Elwood has been provided by the trustees.[6]

This pesthouse was a temporary expedient, and financial considerations forced it to be closed as soon as the threat of an epidemic subsided. (John Swift paid the Village $14.41 for the services to his servant, so the trustees did not have to bear the entire cost.)[7] The Board of Trustees was extending charity to a member of the community who could not care for himself, yet the isolation of Mr. Cunningham was for the expressed purpose of protecting the community. Rochester's commitment to care of the sick poor was limited by the needs of the villagers and the constraints of small town finance.

The reluctance of governments to spend money on hospitals manifested itself on the state level in 1832 when a cholera epidemic swept New York and Lower Canada. In "An Act for the Preservation of the Public Health," passed on June 22, 1832, the State Assembly declared a strict quarantine, but it refused to finance or enforce it.

> 1) All vessels and all persons arriving at any place within this state from any part of Canada are subject to quarantine.
> 2) Every city and incorporated village is to appoint a board of health of three to seven members and a health officer.
> 3) The supervisors, overseers of the poor, and justices of the peace are to constitute a board of health.
> 4) Power and duty of the boards:
>   a) to determine the period of quarantine; not to exceed fifteen days.
>   b) to fix the duties and salary of the health-officer.
>   c) to make regulations in their discretion.
>   d) to employ persons as necessary.
>   e) violation of any regulation liable to fine not to exceed $1000 and 2 years imprisonment.

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[6] Rochester, *Doings and Proceedings of the Trustees and Inhabitants of Rochesterville*, October 11, 1823.

[7] *Ibid.*, November 17, 1823.

5) All expenses incurred to be charged to the respective counties, levied, collected and paid as other county charges.[8]

Rochester's trustees were forced into action, but they kept a tight hold on the purse strings and allotted the Board of Health "an amount not exceeding $1000"[9] to cope with the epidemic. By late July, Rochester had its first "multi-bed hospital." The location of the building was a closely guarded secret, for mobs had attacked cholera hospitals in New York, Philadelphia and Utica,[10] but in *Rochester, a Story Historical,*[11] J. M. Parker locates the hospital in a converted cooper's shed off Brown Street on the Erie Canal. She describes the hospital as "often filled to overflowing, the dead and the dying lying upon the ground."[12] In effect, this place isolated the sick poor from the rest of the villagers; well-to-do cholera victims stayed at home, cared for by their own physicians.

Rochesterians reacted violently to this attempt to isolate cholera victims. The Board of Health attempted to buy houses for poor families who lived in unhealthy environments:

> These houses were not in any way to be used as hospitals for the sick, but as dwellings for the poor who were in health. This was finally made known to all persons in that part of the town, whoever made any inquiry as to the objects for which these buildings were being erected. The houses were about completed and would this day have been occupied; but a mob assembled last night and tore down and wholly prostrated said buildings . . . the said mob was composed of citizens of this village. Complaints have been made in relation to the present hospital. The Board of Health cannot for a moment believe that the health of any persons is endangered by residence therapy . . . the Board, however, anxious to relieve the fears of all persons are now endeavoring to procure some other place . . . but until some other place is provided, they must retain the one now in use; it is kept guarded, and any injury done to the building will be punished with the utmost severity.[13]

In 1832, the words "pesthouse" and "hospital" were equivalent in most western cities.[14] The public feared the establishment of a pesthouse for cholera as much as the disease itself, despite reassurances from the Boards of Health that the hospitals were for their own protection.

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[8] As abstracted from New York, *Laws of New York State* (1832) Chap. 333 This law was renewed in 1835, but the state passed no further public health legislation until April 10, 1850, during the next cholera epidemic.

[9] Rochester, *Records of the Proceedings of the Trustees of Rochester* (1832), p 109

[10] C E. Rosenberg, *The Cholera Years* (Chicago: University of Chicago Press, 1962), p. 95.

[11] J. M. Parker, *Rochester, A Story Historical* (Rochester Scrantom, Welmore, 1884), p. 192

[12] *Ibid.*, p. 192

[13] *Rochester Daily American*, August 2, 1832.

[14] Including Rochester, Albany and especially Utica where the establishment of a pesthouse eventuated in its burning by angry mobs

In terms of health care, the municipalities were operating under two constraints. The first was the attitude of the public. At best, the citizens were apathetic about pesthouses, at worst they were antagonistic to the point of violence. Rochesterians called for protection, but they would not tolerate isolation hospitals, one of the few anticholera measures available in 1832. The second constraint was the lack of funds. Rochester was a changing city with a tight budget and a shifting tax base, and "most Americans were unwilling to be taxed or otherwise inconvenienced at the behest of some health board;"[15] consequently, 1832 and 1834 (epidemic years) witnessed Rochester's only substantial public health expenditures until 1848.

Since the city was unable to establish hospitals for the poor, the state government became the only body which could support a permanent hospital. However, the State would not finance local institutions for the acutely ill, for it was involved in creating institutions for the control of those who were potentially dangerous to society. Quarantined imigrants were placed in the New York City Marine Hospital,[16] lunatics were locked up in the asylums and criminals were placed in the new (1816) Auburn Prison. Furthermore, the reputation of medical treatment and the medical profession itself was declining. The proliferation of such groups as the Thomsonians, Grahamists and Homeopaths is an indication that the "regular doctors" had little attraction for the populace. Institutionalization was created as a panacea for the control of social deviants and the chronically disabled. Hospitals could obtain no government support and they remained a much feared last defense against epidemics.[17]

The public attitude towards hospitals began to change after 1837, when the short-lived Western Ear and Eye Infirmary of Rochester received an appropriation of $500 for two years in the state charity bill. In 1838 the Geneva Medical College opened the "Western Hospital for the Indigent" in one room over a shoe factory. This hospital was established solely to furnish subjects for medical students. The only evidence of public response was an excited comment in the *Rochester Republican:*

> It is the duty of the public to extend all available aid to the afflicted whom misfortune will otherwise place beyond the reach of relief.[18]

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[15] Rosenberg, *op. cit* (n. 10 above), p. 117.

[16] The Marine Hospital was financed by a head tax on sailors and immigrants entering New York Harbor, and it was to care for both groups. The sailors were soon displaced by the immigrants in the hospital, however

[17] This was true in all of upstate New York Despite the fact that Dr. Alden March of Albany had been calling for a public hospital in that city since 1829, no hospital was built until the 1850s.

[18] *Rochester Republican*, December 25, 1838.

Private interest in hospitals increased as Rochester's merchants evolved into a group of wealthy, socially prominent families. In *The Cholera Years,* C. E. Rosenberg comments that "the operation of hospitals, as distinct from almshouses, was not at this time considered a municipal responsibility . . .,"[19] and the New York, Philadelphia and Boston Hospitals provided models for this kind of private activity.[20]

In 1845, the Female Charitable Society, an organization of socially prominent women which had been caring for the poor since 1822,[21] established a hospital committee with the goal of building a private hospital similar to those in Boston and New York. While medical education was not high in their priorities, the Society shared many of the goals of the earlier groups; most importantly the hospital was to provide proper medical care for the poor. The ladies' husbands formed the Board of Trustees of the "Rochester City Hospital" which was incorporated on May 7, 1847, but not completed for many years.

The Female Charitable Society lacked the *sine qua non* for the completion of its plan—money in the form of state aid. Perhaps the Rochester group did not have the requisite influence in Albany to obtain such aid, but this is unlikely as other groups in New York State had the same problem.[22] The state government was unwilling to support new private hospitals; hospitals were not integrated into the state's concept of poor relief or public health, so support for new hospitals was a dead issue. No hospitals could be built until local government (or as we shall see later, the Catholic Church) was willing to provide funding.

Meanwhile, a cholera outbreak in 1848 made the need for a permanent hospital acute. The city tried to obtain the Forest Saloon[23] as a temporary hospital, but the local residents were outraged.

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[19] Rosenberg, *op. cit.* (n. 10 above) p. 87.

[20] These three groups shared patrician background, goals (care for the sick poor and improved medical training) and influence with the state governments which allowed them to obtain funds for the initial capital investments in the institutions.

[21] The Female Charitable Society, founded in 1821, was composed of the women of Rochester's established families. The society provided outdoor relief to the poor in the form of loaned blankets, food and clothing as well as teaching and nursing care. Each lady was assigned a certain section of the city as her responsibility. The society was a seasonal operation, eschewing the summer months, but it provided the only care for the poor in the city at this time

[22] Albany Hospital was incorporated in April of 1849, but the state refused to fund it until a suitable building had been established in 1854. Similarly, Troy Hospital was incorporated in 1851 and the Buffalo Hospital of the Sisters of Charity was incorporated and built in 1848. Thus there was a general interest in hospitals, even if state funding was unavailable.

[23] On Mt Hope Avenue, next to Mt. Hope Cemetery in the 8th Ward. Mt. Hope Cemetery was located on a wooded hill overlooking the Genesee River on the edge of town.

> Such a place is doubtless necessary, and it is the dictate of wisdom to provide in season for the reception and care of such as fall upon the hands of the public for attention in these matters . . . the Board is bound to yield to impulses of humanity . . . they are nevertheless obliged to see that no unnecessary exposure of life or health is brought upon themselves and friends by indulging their convenience or interests in the location of a sick house.[24]
>
> . . . a receptacle of all that is terrible in life and instinctively shunned by the world of human beings . . . it cannot but arouse, all who have any feeling on this subject, to take immediate and vigorous measures to nip in the bud the whole plan.[25]

When the Board of Health finally managed to rent a "hospital" from Mayor Levi A. Ward (a vigorous proponent of pesthouses), it mysteriously burned down, leading to accusations of arson and prolonged recriminations in the community.[26]

According to the opponents of pesthouses, such a building destroyed the aesthetic value of a neighborhood and drove the property values down. Certain Rochesterians even argued that a pesthouse would ruin the atmosphere of Mt. Hope Cemetery.[27] Moreover, sickness remained inexorably linked to poverty and moral decay. A State Senate Committee reported:

> All experience has proved that the spots in our cities which are pre-eminently the nuclei whence its fearful ravages spread with the greatest rapidity and mortality, are those in which are found the most filthy, degraded and vicious of our population, who are congregated in dense masses amid squalid poverty and in apartments not only without ventilation or cleanliness, but in which neither of these necessities of human life can by possibility exist.[28]

Established institutions such as the New York Hospital did not treat contagious diseases and consequently avoided the label of pesthouse. Upstate New York needed isolation hospitals to control epidemic diseases, however, and the cities could not afford the luxury of distinguishing a hospital from a pesthouse.

Nevertheless, support for a permanent hospital in Rochester grew following the 1852 cholera epidemic. The Rochester Board of Health stated:

> The experience of the past season had, more than ever before, impressed the Board with the urgent necessity of a public hospital, not only for the accommodation of the unfortunate sick poor, and others without families or suitable conveniences at home,

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[24] Letter, *Rochester Daily Advertiser*, June 8, 1849.

[25] Letter, *Rochester Daily Advertiser*, June 8, 1849

[26] Letter, *Rochester Daily Advertiser*, June 8, 1849. This was partially the case, as Mt. Hope Cemetery was a paragon in those days, representing the modern type of "Forest Lawn" Cemetery.

[27] This building was later rebuilt at a cost of $4960.14, and the city continued to use it as a pesthouse until it was replaced by Hope Hospital in 1869. Mr. Ward and subsequent owners received from $75.00 to $90.00 in rent during these years.

[28] New York, *Senate Documents* (1850), vol. 3, #92.

> within the city and its vicinity, but for those strangers also, who arrive here almost daily, and whose numbers are likely to increase year by year, from foreign lands, in search of a better and happier home at the west. It is earnestly hoped, that measures will be taken during the ensuing session of the Legislature, to secure means sufficient to erect one of such dimension, and of such plans, as will answer the public requirements and prove an adornment ot the city.[29]

The city papers also favored a permanent hospital:

> The city . . . requires this charity for the indigent whom sickness may prostrate within its limits.[30] . . . and . . . are we not responsible, in some measure, at least, for this destitution and suffering if it is in our power to relieve it. . . .[31]

Similar movements existed in Albany, Troy and Buffalo. The hospitals themselves had not changed—they still provided custodial care to the poor and the homeless—but the public had come to perceive hospitals as a necessary and worthy charity. Part of the new public attitude can be attributed to the absence of major epidemics in the years following 1852. People did not fear hospitals when there were no epidemics, and devoid of emotional overtones, hospitals could be integrated into state charity policy. After 1848, the creation of new hospitals can be attributed primarily to changes in this policy.

There were precedents for state funding of hospitals, New York State had aided the New York Hospital (with funds derived from New York City auction duties), but from 1806 onward, state funds went solely to the hospital's mental institution, the Bloomingdale Asylum.[32] When the New York Fever Hospital was founded in 1823, the State refused to grant direct support and authorized it to raise money by lottery.[33] The New York Marine Hospital and the State Hospital in New York City were supported by a capitation tax on immigrants and seamen.[34] The only institution which received direct state funding was the New York Eye Infirmary ($1000 per year).[35]

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[29] Board of Health, Rochester, New York, *Report of the Board of Health on Cholera as it Appeared in Rochester, N Y. in 1852* (1853), p 52

[30] *Rochester Daily Advertiser,* August 8, 1953

[31] Letter, *Rochester Daily Advertiser,* August 8, 1953.

[32] In 1806, the New York Hospital was granted an annuity of $12,500 for the support of the Bloomingdale Asylum. This annuity was to last until 1857. In a review of state policy towards the hospital in 1831, a special legislative committee reaffirmed the need for the funding of the Asylum, saying "Besides being a dispenser of charity, it furnishes great and valuable advantages for medical instruction " New York, *Assembly Documents* (1831), vol. 3; #263

[33] New York, *Laws of New York State* (1923), Chap. 82.

[34] This funding for the Marine Hospital started in 1827, and in 1840 for the state hospital.

[35] This funding started in 1824, one year after the start of the Infirmary and lasted until 1848 It was "to be applied for the purpose of securing a suitable building for the accomodation of patients under the care of said institution, and for defraying the other incidental expenses". It was given on the proviso that the infirmary train at least one medical student. New York, *Laws of New York State* (1824), Chap 245; p. 306.

This indirect funding was suspended in 1848-1849 when the Supreme Court seemed about to declare the capitation tax unconstitutional.[36] The legislature felt it had to support the Marine Hospital, the State Hospital and the Eye Infirmary. Speaking about the New York Eye Infirmary, the Committee for Charitable Institutions stated:

> The painful and afflicting maladies which are annually relieved by this excellent charity, prevents hundreds of valuable citizens from becoming a public charge and enables them in numerous instances capable of providing for their helpless and dependent families. Apart therefore, from the calls of humanity, the thousands who have been prevented from becoming a public charge, have lessened the amount of taxes for the support of the poor by an amount infinitely greater than all the public and private contributions. Hence, on the score of economy alone, there are the most urgent reasons for liberal contributions for this Institution.[37]

These hospitals received specific state support from 1848 through 1851. In 1851, the Assembly took the monumental step of apportioning $25,000 out of general revenues to be divided among the established hospitals in the state. This bill[38] was designed to encourage admission of the poor to the hospitals by underwriting the cost of their care. Each hospital was to submit an account of the patients and diseases treated in the preceding year, and the money was disbursed on a pro rata basis according to the numbers of patients treated. This act, which was part of the General Charity Bill of 1851, did not specifically limit the reimbursement to care for the poor; the hospitals received support for everyone treated. This issue reappeared later, but it is clear that the legislators assumed that only the poor would use the hospitals and that the well-to-do would stay home.

Hospitals thus became part of the whole plan of poor relief; after 1851 health care was considered to be one aspect of rehabilitating the poor. This was a major advance from the past practice of epidemic control, but it was simply an extension of the established rationale of poor relief. The legislature was trying to find an inexpensive way of making the sick poor into functional members of society, i.e. taxpayers.

Rochester benefitted directly from the new policy when in 1852 the city received $500 for the support of a hospital (a pesthouse used for the treatment of cholera victims). Furthermore, the availability of state funds caused a resurgence among pro-hospital groups on the local level.

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[36] Comptroller Millard Fillmore felt it was clear ". . . that the law authorizing a capitation tax on immigrants would be held unconstitutional by the Supreme Court of the United States. . . . I perceive no remedy for this but a direct appropriation from the treasury . . . ." New York, *Assembly Documents* (1849), vol. 3; #140.

[37] New York, *Assembly Documents* (1848), vol 5; #139.

[38] New York, *Laws of New York State* (1851), Chap. 410.

The Female Charitable Society increased its pressure on the Common Council until it obtained a clear title to the Western Burial Grounds in 1857 (after removal of the graves to Mount Hope Cemetery).[39] With the hospital site in hand, the Society cajoled the Common Council to pledge the proceeds from the sale of the "Almshouse property"[40] ($7000) to Rochester City Hospital, on the condition that the trustees raise $5000 on their own. The money was raised by a public fund drive which repeatedly promised that, "this hospital is not designed for cholera, smallpox or other diseases of a contagious character."[41]

The drive ultimately raised $7200, including $6000 from donations and concerts, $500 from the legacy of Everard Peck and $700 from the sale of the charity school lot. A building was finally completed in 1862, but the Hospital was $4000 in debt to the Rochester Savings Bank, and it could not receive state aid because it had not admitted any patients. The hospital remained closed until 1864.

Meanwhile, in 1857, Bishop Timon of the Rochester-Buffalo Diocese had raised $1300 to buy a lot in the "Bull's Head" (an area on the outskirts of the city) and had opened St. Mary's Hospital in two stone stables on the property. The hospital was staffed by nuns from the Buffalo Hospital of the Sisters of Charity (a hospital founded by the Rev. Mr. Timon in 1848).

St. Mary's was the first true hospital in Rochester.[42] Its principal clientele was the poor, and it accepted all cases of non-infectious disease, shunning, as did City Hospital, cholera and smallpox patients.[43] The city and county poor commissioners used the hospital as the holding place for sick paupers. In 1859 the County Board of Supervisors paid St. Mary's $900 for the care of the poor (at the rate of $.70 per week, the same as the cost of maintaining a person in the poorhouse.)[44] However the Board did not spend the money eagerly, as in 1860 it paid only $200 on a bill of $1700, arguing that St. Mary's had not obtained proper authorization for all its county patients.[45]

St. Mary's Hospital was also eligible for State funds authorized in the 1851 Charity Bill, and by 1860 the hospital had received $8418.43 from New York

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[39] On West Buffalo Street, now Main Street

[40] The almshouse was the city's "white elephant"; the property had been bought and a bond issue floated, but the building had never been built.

[41] *Rochester Daily Union*, June 5, 1855

[42] For comparison, the Buffalo Hospital of the Sisters of Charity opened in 1848, Albany General Hospital in 1854 and Troy Hospital in 1850.

[43] Zwierlein, *Life and Letters of Bishop McQuaid* (Rochester; Art Print Shop, 1925), p. 235.

[44] *Union Advertiser*, November 7, 1859.

[45] *Union Advertiser*, October 15, 1860.

State. Even the federal government provided some aid by granting St. Mary's a Marine Department Hospital Contract.[46] This contract authorized St. Mary's to care for sick immigrants, and the services rendered were paid for by the U.S. Treasury.

The success of St. Mary's Hospital may have added impetus to the drive for completion of Rochester City Hospital. Both hospitals had similar goals—to provide health care for the poor who were not suffering from contagious disease. One editorial claimed that St. Mary's met the needs of the city and that Rochester City Hospital was superfluous:

> . . . but there may be those who feel it is the duty of the Protestant portion of the community to establish hospitals that may be considered Protestant institutions—although a city hospital could not be really so.[47]

This editorial was not completely fair, for even though sectarian jealousy existed, the City Hospital had been a project of the Female Charitable Society long before St. Mary's existed. Nevertheless, resentment of St. Mary's by the largely Protestant City Hospital Board probably did speed hospital construction. Insinuations of inter-hospital jealousy were to appear again later.

The Civil War finally opened Rochester City Hospital. The U. S. Government needed hospitals to care for disabled soldiers and it paid $5.50 per week for each soldier's care. Like most hospitals, St. Mary's was pressed into service immediately; by the end of the war 5000 soldiers had stayed there. An energetic fund drive which appealed to the patriotism of Rochesterians opened City Hospital in 1864, and Union soldiers were among its first patients. By 1870, Rochester City Hospital had received $27,854 and St. Mary's at least $30,000 from the federal government, almost one-quarter of their total budgets.

State aid to hospitals continued through this era, but in 1864, the legislature altered the wording of the Charity Bill[48] so that hospitals received compensation only for the treatment of "beneficiary" patients. The State no longer would support every patient; only those who could not or did not pay were eligible for state support. This alteration provides an index of the status of hospitals in 1864. In 1851, only the poor used hospitals, so the legislature knew that hospital support would go to the poor. In 1864, the hospitals served not only soldiers and the poor, but also many private patients who paid the hospital fees in full. By inserting the word beneficiaries in the 1864 charity bill, the legislature made it clear that its funds were provided specifically to insure health care for the poor. The character of hospitals had changed; they were becoming respectable and as a result could take in private patients.

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[46] Marine Hospitals were started in January 1811, funded by deductions from sailors' pay. The Secretaries of the Treasury, Navy and War were the commissioners of the trust In the early years, large general hospitals were often granted contracts by the Marine Department to take care of sailors and immigrants St. Mary's became part of this system through the influence of Samuel G. Andrews and U.S. Collector Pliny M. Bromley, local citizens interested in the hospital.

[47] *Union Advertiser*, November 15, 1859

[48] New York, *Laws of New York State* (1864), Chap. 401.

The emphasis on the poor did not hurt the hospitals financially, for the Assembly began to enact special appropriations designated for hospital construction. Special bills gave St. Mary's a total of $19,000 in 1864, 1866 and 1870 while City Hospital received $5000 in 1869 and $15,000 in 1870. Thus the State recognized that it was not enough to subsidize health care for the poor; more hospital beds had to be created to meet the needs of a growing population.

The munificence of the New York State Legislature came to an abrupt halt in 1872. The governor threatened to veto the 1871 Charity Bill if it were not pruned,[49] so hospital aid was abolished as part of a general retrenchment in government spending. Private hospitals were particularly vulnerable because of the increasing number of state owned hospitals.

In retrospect, Rochester's hospitals were fortunate in that they were founded during an era of massive hospital support from all levels of government. Between 1864 and 1872, Rochester City Hospital received almost one-third of its income from the state and federal governments, and almost one-fifth of its income from local government. The remainder came from private fund drives and contributions.[50] The hospitals were charitable institutions, and were not self-supporting; without government aid they would not have survived. The fortuitous combination of the Civil War and an energetic state hospital policy allowed the private hospitals to remain solvent in their first years of existence. This pattern of hospital growth was typical of all of New York State, as the years after 1850 witnessed the emergence of the hospital as an institution.

Local government and private charity were the only sources of hospital income after 1872. Local poor commissioners were forced to support paupers formerly aided by state subsidy, and given the parsimony of the local government, it was natural that a dispute arose. The county had contracted to pay the hospitals $2.00 per week per patient and the city was to pay $1.75. More often than not the city paid only $1.00, preferring to send its patients to the less expensive poorhouse. In the words of the Overseer of the Poor, "Patients all cut up we shall send to the hospital, but all others must go the the poorhouse."[51]

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[49] As a result, the legislature reduced all items over $500 by 25%. The final version cost $750,000. *New York Times*, April 22, 1871.

[50] The figures for St. Mary's are probably comparable, but we are uncertain, due to the loss of hospital records from this era

Hospital income dropped slightly in the mid-1870s when a depression gripped New York State. Large gifts to charity were a luxury, and neither government nor individuals could afford to divert funds to an institution which did not produce an income.

The pattern of hospital income began to change in the late 1870s, as Rochester experienced an economic boom. The tobacco, brewing and patent medicine industries thrived; Bausch and Lomb began a new era of growth, and the Eastman Kodak Company was soon to enter the scene. This new affluence brought a renaissance of all charities—the Humane Society was founded in 1880, the YMCA was reorganized locally, and Rochesterians jumped to the support of the Red Cross in 1881.

St. Mary's and City Hospital were among the most popular and best publicized charities. Thanksgiving parties, bazaars and concerts were lovingly described in the social pages of the papers, and large donors had their eleemosynary acts heralded in the daily papers and the *Hospital Review*. The public responded eagerly. In 1864, City Hospital received only one-twentieth of its income in donations, while by 1881 private donations accounted for one-third of the budget.

The rise in donations was paralleled by an influx of private patients. The hospitals continued to admit beneficiary patients, but they were soon outnumbered by private patients. This meant that paying patients and not government became the hospitals' primary means of support. The image of a charitable institution was retained, but hospitals had assumed a new function, the care for the acutely ill of all social classes.

The impetus behind the influx of private patients came from many areas, one of the simplest being an improvement of facilities. Rochester City Hospital's new wing came to resemble a hotel:

> The mansard of the East Wing had been added in 1879 for private patients and these rooms were the last word in elegance—much finer in every way than were the old rooms . . . These private rooms served their purpose well, for they tended to break down the tremendous prejudices against hospital treatment which existed then . . . .[52]

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[51] *Union Advertiser*, August 9, 1880.

[52] V. J. Smith, *A Century of Service, Rochester General Hospital* (Rochester; Rochester General Hospital, 1947), p. 90.

Moreover, Rochester City Hospital formed its school of nursing in 1880. The young, diligent student nurses could be hired as private duty nurses,[53] and the private patient no longer had to wait for the ministrations of the overworked ward matrons. Finally, in 1881, City Hospital changed its by-laws so that private patients were no longer pushed into wards with the beneficiary patients.

By 1890, it was possible for a wealthy Rochesterian to have a room dedicated in his name at one of Rochester's hospitals by paying for construction and furnishing.

Perhaps the most important advance made in this era was the introduction of antiseptic and later aseptic surgery, which required in-hospital treatment. The City Hospital surgery was moved from the autopsy room to the hospital library, and in 1855 the carpet was removed from the library floor to make the surgery easier to clean. Finally, in 1888, the hospital built a special "clean" room to be used specifically as a surgery. Major surgical procedures were still carried out in homes, but there was a strong movement towards in-hospital surgery.

The influence of socially prominent surgeons added to the popularity of hospitals. Dr. Edward Mott Moore, chief surgeon of St. Mary's Hospital from 1858—1888, was a trustee of the University of Rochester, president of the Monroe County Medical Society, the New York Medical Society, and the American Medical Association.[54] Dr. Montgomery, chief surgeon at Rochester City Hospital from 1863 to 1884, was also a well-known physician. Their interest in hospital care enhanced its quality and social prestige in the eyes of Rochesterians.

No single factor will account for the increased numbers of private admissions to hospitals. New facilities made hospital stays more pleasant, while advances in surgical techniques led to more surgical admissions. Social acceptability provided an intangible background for these concrete developments.

By the mid-1880s, private patients had come to occupy the majority of hospital beds (See Figure 1 and Tables 1 and 2). In an era of prosperity, hospitals had begun to offer tangible benefits to the well-to-do. They could receive the most modern medical care in surroundings which were more

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[53] *Ibid*, p. 50. This was a common practice in New York Hospitals The fees received for special nursing care helped finance the School of Nursing

[54] Dr. Moore was also president of the American Surgical Association, a delegate to the International Medical Congress of 1888, the first president of the New York State Board of Health and well known for research in the reduction of fractures and early work in blood transfusions He was active at St Mary's and City Hospital

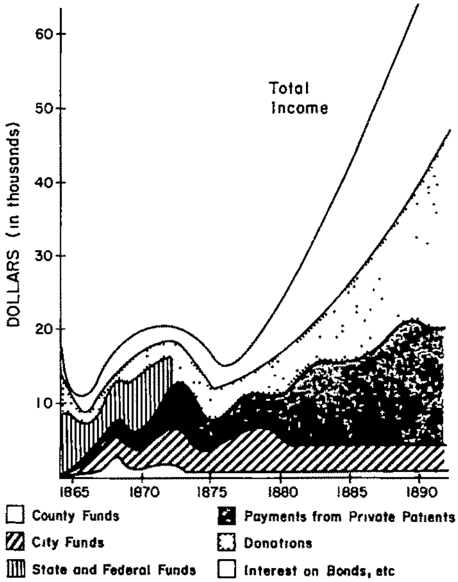

Fig. 1 Rochester City Hospital: Income by source, 1864-1892.

nearly compatible with their own life style at home, and they could benefit from their own gifts to charity.

The success and popularity of the institution was manifested in the proliferation of hospitals in Rochester in the late 1880s. In 1887 buildings for the Infants' Summer Hospital were constructed solely out of private gifts to provide for children with "summer illnesses." In 1887, Mrs. Hiram Sibley, wife of the founder of Western Union, organized the Homeopathic Hospital (now called the Genesee Hospital) after City Hospital refused to share its facilities with homeopathic physicians. Finally, the Hargous Memorial Hahnemann Hospital (now Highland Hospital) was founded in 1889 as a result of a disagreement over the practice of homeopathic medicine.

Homeopathy was, by and large, supported by the upper class. W. G. Rothstein states in *American Physicians in the 19th Century:*

> By 1883 the president of the American Institute of Homeopathy claimed that "it is accurately safe to say that in the aggregate at the lowest calculation fully one-third of the taxable property is held by the people who employ homeopathic treatment." While this was undoubtedly one of the flights of campaign oratory common among the medical sects of the period, homeopathy did maintain its popularity among the upper classes for many years.[55]

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[55] W. G. Rothstein, *American Physicians in the 19th Century: From Sects to Science* (Baltimore: Johns Hopkins Press, 1972), p 234.

Table 1: Income of the Rochester City Hospital by Source

Year	U. S. Gov't For Care of Soldiers	State Gov't For "Beneficiary" Patients	County Gov't For Care of Poor	City Gov't For Care of Poor	Payments From Private Patients	Private Donations	Total Income
1864	$7,788.00	$	$ 172.81	$ 430.25	$ 335.72	$ 1,094.20	$19,668.62
1865	7,769.25			392.75	170.60		10,404.00
1866	711.00	3,704.11	293.83	1,342.50	1,338.61	1,800.00	10,618.79
1867	1,166.00	2,000.00	1,046.74	3,249.26	1,572.86	1,649.00	11,483.69
1868	2,493.88	3,152.13	3,159.57	2,553.02	2,290.64	2,300.00	16,975.32
1869	3,900.00	2,220.24	910.00	2,489.84	2,626.26	2,100.00	19,139.68
1870	4,027.45	4,436.06	1,348.00	2,515.00	2,538.58	2,598.39	19,038.72
1871		4,066.33	1,663.89	4,484.14	2,736.66	2,888.00	20,122.23
1872		4,085.01	1,590.71	4,350.79	5,927.97	2,100.00	
1873			739.27	6,794.94	5,192.66	4,327.00	20,665.98
1874			585.00	2,750.28	5,517.26	3,924.00	17,688.59
1875				3,289.75	4,238.99	3,447.73	17,121.33
1876			340.60	4,539.25	4,555.93	4,100.00	15,435.76
1877			836.86	4,409.25	4,792.18	3,600.00	16,379.04
1878			921.48	5,664.75	4,966.50	2,884.87	16,739.56
1879			1,110.36	5,405.00	4,621.60	3,143.85	17,998.43
1880			857.07	4,123.08	6,153.85	4,556.53	19,700.53
1881			849.88	3,602.35	8,599.99	10,542.94	27,775.50
1882			267.44	4,300.75	9,898.83	8,077.31	30,666.83
1883			1,058.85	3,655.87	11,883.92	10,485.97	38,447.98
1884			1,059.16	1,576.70	11,352.93	9.079.43	35,376.91
1885							
1886							
1887			753.60	3,340.37	13,724.21	12,196.65	44,052.38
1888			500.46	4,421.58	15,262.61	22,981.78	59,125.00
1889			665.19	4,579.15	15,881.71	16,473.36	55,248.19
1890			518.60	3,406.34	16,601.44	19,645.48	63,905.99
1891			677.75	4,192.16	13,712.45	17,155.61	58,337.39
1892			947.30	3,802.87	16,234.65	26,517.46	49,593.21

Table 2: Income of St. Mary's Hospital by Source (the records are incomplete due to a fire in 1891)

From the State:

Year	Special Appropriations	General Appropriations
1859	$	$1,756.82
1860		6,661.61
1863		5,540.00
1864	2,000.00	2,000.00
1865		9,586.08
1866	2,000.00	8,845.14
1870	15,000.00	

Income (1876-1893):

Year	County Gov't For Care of Poor	City Gov't For Care of Poor	Payments From Private Patients	Total Income
1876	$ 884.85	$15,185.98	$ 8,016.81*	$24,964.30
1877	1,098.22	14,243.00	9,661.47*	26,615.04
1878	1,075.93	14,552.50	8,473.22*	25,633.02
1879	1,256.91	14,840.20	8,146.38*	25,464.93
1880	1,482.48	12,969.30	6,476.56*	22,790.30
1881	1,449.58	11,766.00	8,053.13*	22,909.36
1882	4,612.55	11,889.06	8,456.58*	24,049.25
1883	1,436.60	11,509.40	8,860.00*	24,657.91
1884	971.78	10,721.74	6,354.52*	25,640.00
1885	698.44	10,507.15	6,525.12*	25,399.00
1886	828.08	11,416.65	10,031.74	25,422.45
1887	760.65	11,826.68	9,462.40	28,373.26
1888	456.40	10,360.16	8,842.25	24,940.80
1889	523.03	11,068.68	10,522.16	26,021.63
1890	490.31	10,043.38	11,238.31	42,513.11
1891	637.28	9,845.70	4,355.06†	28,500.00
1892	931.71	8,348.41	12,743.64	35,324.20
1893	1,014.27	9,292.97	13,021.00	31,758.74

* Includes private patients and income from bonds.

† 1891 was the year of the fire.

This popularity gave rise to magnanimous financial support. In 1889, Don Alonzo Watson (a local businessman), gave the Homeopathic Hospital $5000,[56] and in 1890 he and the Hiram Sibley's gave another $30,000.[57] The Hargous Hospital received similar support in 1890 when Mrs. Appleton (formerly a Hargous of Rochester) gave the hospital $35,000.[58]

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[56] *Union Advertiser*, March 15, 1889

[57] *Ibid.* January 30, 1890.

[58] *Ibid.* August 15, 1890.

The amounts of the gifts were equal; it appears that Mrs. Appleton did not wish the Homeopathic Hospital to outdo her family's project, the Hargous Memorial Hahnemann Hospital. This insinuation of rivalry is echoed in the apocryphal story that Mrs. Sibley (of Rochester's newly prosperous East Side) started the Homeopathic Hospital in order to spite the "West Siders" who dominated City Hospital. Considering the early rivalry between Rochester City Hospital and St. Mary's Hospital, it appears that personal motives played an important role in the creation of new hospitals. As charitable institutions they served the needs of the benefactors as well as those of the patients.

The flurry of hospital building ended in 1894 when Dr. J. F. Whitbeck established Dr. Whitbeck's Hospital (now Park Avenue Hospital). This was the last hospital to be built in Rochester, but one sensitive issue of hospital care still had to be resolved—the problem of contagious disease.

In 1866, St. Mary's offered to admit cholera patients,[59] becoming the first hospital to deal with contagious disease. There were no cholera epidemics in this era, so the offer was largely symbolic, but it represented a change in public consciousness. Hospitals no longer had to shun contagious illness in order to survive; they had become a permanent part of charity programs. The other hospitals followed this example later: City Hospital built the Hall Pavilion for the care of contagious diseases in 1882 and Homeopathic Hospital built the Brothers' Cottages in 1889.

Despite this new attitude, Rochester's hospitals were unable to deal with the great smallpox epidemic of 1901. The Rochester Board of Health had to expand the ancient Hope Hospital[60] with voting booths to hold the sick. The private hospitals could not cope with this epidemic, so the city was forced to resort to the old format of a temporary pesthouse. The advances in medical science had not eliminated the fearsome qualities of smallpox, and hospitals had to relinquish their position as the source of all medical care. Temporarily, at least, the hospitals returned to their position of 1860.

There were two factors necessary for the successful establishment of a general hospital. The first element, a charity oriented group, initiated action. The second element, the state and local governments, provided the financial support which sustained the hospitals in their early years. The options of the state and local governments were determined by the public—hospitals could not be built until the citizenry would accept them—but private groups could not found their own hospitals until late in the century. This shifting balance of private and government interest in hospitals explains the evolving character of the institution and delineates three periods of hospital growth.

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[59] *Ibid.* May 12, 1866.

[60] The municipal pesthouse built in 1869 to replace the Spring Street pesthouse formerly owned by Levi A. Ward.

In the first era, hospitals were lumped with almshouses and carried the stigmata of disease, declining property values and charity. The political and economic realities of the 19th century demanded that poor relief protect the public and make the poor into productive citizens. The goal was to get them off the welfare roles and institutionalization was the method of choice. Until 1850, hospitals had no place in this scenario as the state would only support institutions for the chronically ill and the municipalities could not overcome public fears. Hospitals remained a phenomenon of the downstate cities.

The next era in hospital growth was created by a new state charity policy. The state not only began to subsidize the care of the poor in hospitals, it even underwrote the costs of hospital construction in the hope of cutting welfare costs. The hospitals were still purely charitable institutions, however, a fact made clear by the nature of the hospital administrations: the Sisters of Charity and the Female Charitable Society. They were able to remain solvent only with government assistance; consequently, the second era ended with the termination of federal and state funding.

The third period, which continued in the 20th century, was marked by the hospitals' ability to attract paying patients. Hospitals more often were the preferred treatment among Rochesterians of all social classes. Hospitals remained important charities, but they were no longer custodians of the poor in the sense of the Yates Report. They were independent of the vagaries of social class and, for the most part, contagious disease.

These variations in government and private attitudes mask the continuity inherent in hospital growth. The charitable, humanitarian interest in hospitals could be and often was overriden by the harsh realities of property values and threats (real or imagined) to public health. In later years, hospitals often became vehicles for personal prestige and jealousy. Even the initial burst of hospital building in the 1850s may have been rooted in a rivalry with Buffalo, whose first hospital was built in 1848, and the success of the hospital as a private institution can be in part attributed to the economic boom of the 1880s. Personal interest and financial concerns provide the consistency behind many of the changes in attitudes towards hospitals.

From the government standpoint, money was the single determinant of hospital policy. Each new twist in the philosophy of hospital support was justified, directly or indirectly, by the need to save money. Yates stated as much in his report, and the ultimate fate of state aid to hospitals can be attributed to a widespread depression. This statement is not to impugn the humanitarian motives of the government, it is just to point out the extreme sensitivity of hospital policy to the exigencies of the budget.

The evolution of hospitals in Rochester was a dynamic process, drawing from both the public and private sectors. This process has not stopped, and the 20th century has witnessed a further evolution of the hospital, governed by the same forces.

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Financial and historical information on Rochester's hospitals was obtained from two largely untapped sources: the archives of the Rochester General Hospital and the archives of St. Mary's Hospital. The information contained here is not indexed but provides detailed data on hospital growth.

The Local History Room of the Rochester Public Library contains a wealth of information, published and unpublished, on Rochester history as well as the invaluable Index of Rochester Newspapers.

THE CHARLESTON PHYSICIAN-NATURALISTS*

G. EDMUND GIFFORD, JR.

Le Fanu has described the period 1700-1750 as "The Lost Half-Century in English Medicine."[1] It was certainly not a lost period in the natural history movement; in fact, it was a period of intense activity. Two of the famous physicians of the "lost period," Dr. Hans Sloane and Dr. Richard Meade, were patrons of Mark Catesby whose *Natural History of Carolina, Florida, and the Bahama Islands* (1731, 1748, 1771) was the first scientific description of the area.[2] Catesby had done his early work in Virginia, 1712-1719, where he had stayed with his sister and brother-in-law, Dr. William Cocke.[3] From

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* This paper, given at the 47th annual meeting of the American Association for the History of Medicine, Charleston, S.C., May 3, 1974, was conceived as a token of esteem for my friend, Dr. Joseph I. Waring. My friends, Elizabeth Power, and Charles and Betty Riordan, helped me immeasurably by checking original sources in Charleston. Both Professors Joseph Ewan and Ashby Hammond read the manuscript and made helpful comments. The studies reported here were supported in part by a grant from the Josiah Macy, Jr Foundation to the section on the history of medicine, Boston University School of Medicine.

[1] William R. LeFanu, "The lost half-century in English medicine, 1700-1750," *Bull. Hist. Med*, July-Aug. 1972, *46*: 319-348. See specifically pp. 326-330.

[2] George Frederick Frick and Raymond Phineas Stearns, *Mark Catesby, the Colonial Audubon* (Urbana: Univ. of Illinois Press, 1961). For the role of Hans Sloane in natural history see pp. 15, 18, 19, 23-32, 36, 38, 40, 45, 56, 58, 60, 65, 69, 74, 77, 79, 87-89, 108, 114-116. Dr. Richard Meade as a patron of Catesby is discussed on pp 19, 30, 45, 99, 116. See Richard H. Meade, *In the Sunshine of Life: A Biography of Dr. Richard Meade, 1673-1754* (Philadelphia: Dorrance, 1974). Elsa G. Allen, "The history of American ornithology before Audubon," *American Philosophical Society Transactions*, 1951, n.s. *41*. 465-474. *The Natural History of Carolina, Florida and the Bahama Islands Containing Two Hundred and Twenty Figures of Birds, Beasts, Fishes, Serpents, Insects and Plants,* by the late Mark Catesby, F.R.S., with an introduction by George Frick and notes by Joseph Ewan (Savannah, Ga.: Beehive Press, 1974). On page 99, under Appendix I, Ewan notes that Catesby named *Dodecatheon meadia* for one of his patrons, Richard Meade, M.D., F.R.S., 1673-1754. On p. ix, George Frick states, "Through Jekyll and Ray, Catesby was also introduced to Samuel Dale, an apothecary in nearby Braintree, the author of a much-used *Pharmacologia* (London, 1693), and Ray's friend and collaborator during the naturalists' later years. Dale visited Nicholas Jekyll's garden in 1711, shortly before Catesby's first departure for America, and it was probably then that they arranged for the younger man to send botanical specimens from Virginia." On p. xi, ". . . Sir Hans Sloane, physician, collector and author of a *Natural History of Jamaica* (London, 1707-15) . . . pledged generously, but not without hopes of equally generous return of seeds and plants." ". . Catesby's movements in the territory of Carolina and what would later become Georgia can be traced in his correspondence with William Sherrard and Sir Hans Sloane. . . ," p xiv. For the relationship between Sloane and Sherrard see Joseph and Nesta Ewan, *John Banister and His Natural History of Virginia, 1678-1692* (Urbana: Univ. of Illinois Press, 1970). "Linneaus, on the other hand, mistrusted Catesby, urged on by his correspondent, Dr. Alexander Garden of Charles Town, who found Catesby's work inadequate. That inadequacy, though, may have been enhanced by Garden's jealousy of his Carolina predecessor." *Papers of the Bibliographic Society of America,* 1960, *56*. 163-175.

[3] Frick and Stearns, *Mark Gatesby*, pp. 11-14, 16, 92.

BULLETIN OF THE HISTORY OF MEDICINE 49 556-574 (1975)
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Virginia, Catesby sent plant specimens to Mr. Samuel Dale of Braintree, "a skillful apothecary and botanist." The specimens attracted the attention of William Sherard and Dr. Hans Sloane, who became his major patrons for his second voyage, this time to Carolina, 1722-1726.[4]

Sloane (1660-1753) was the first medical practitioner to receive an hereditary title.[5] Grown rich by a successful practice and a provident marriage, he bought the manor at Chelsea in 1712 and became the landlord of the Apothecaries Physic Garden at Chelsea, planted in 1676. Sloane's interest in natural history began early; he had sent his collection of plants to John Ray who used them in his *History of Plants* (1686). The next year, 1687, Sloane went to Jamaica as a physician for 15 months, and during this time he amassed about 900 specimens of plants, mostly new, the island being virgin ground for the botanist. Sloane was president of the College of Physicians, 1719-1738, and the Royal Society, 1727-1741, succeeding Sir Isaac Newton. Two of his acts were most important to natural history: 1) In 1722 he gave the Apothecaries a new lease on Chelsea Physic Garden property in perpetuity in return for an annual tribute of fifty plants, no two alike, to be handed to the Royal Society until two thousand different specimens were accumulated. His negotiations with Apothecaries improved their relations with the physicians and secured for the Royal Society a valuable herbarium which is still preserved in the Natural History Museum in London; 2) Sloane's collections went to form the nucleus of the British Museum in 1759.

Dr. Richard Meade (1673-1754) was one of the most successful and celebrated physicians of the eighteenth century. Known as the "princely Meade," he was one of the owners of the famous gold-headed cane. A Catesby patron, Catesby named a plant, *Meadia,* in his honor. The plant, vernacularly known today as "Shooting Star," was renamed *Dodecatheon* meadia by Linnaeus. It is figured on one of Catesby's plates (Fig. 1).[6]

Catesby's base of operations for his Carolina tour (1722-1726) was Charleston, a little town on the coast in the frontier area, with Indians and Spanish to

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[4] *Ibid.*, pp. 9, 15-18, 93.

[5] For biographical material about Sloane, see Gavin Rylands de Beer, *Sir Hans Sloane and the British Museum* (London-New York: Oxford Univ. Press, 1953), and Eric St John Brooks, *Sir Hans Sloane the Great Collector and His Circle* (London: Batchworth Press, 1954). For a present account see "The Chelsea Physic Garden," *J. Royal Horticultural Society*, June 1975, *100* (6): 234-237

[6] Frick and Stearns, *Mark Catesby*, pp. 67, 99; Mark Catesby, *Natural History of Carolina, Florida and the Bahama Islands* (London, 1754), vol. 1, plate 1, appendix 1: "to this new genus of Plants I have given the name of the learned Dr. Richard Meade, Physician to His Majesty and F.R.S. in gratitude for his zealous patronage of Arts and Sciences in general, and in particular for his generous assistance towards carrying the original design of this work into execution." Harold William Rickett, *Wild Flowers of the United States*, vol. 2: the Southeastern States (pt. 2 of 2 pts.) (New York: McGraw-Hill, 1967), pp. 383-384.

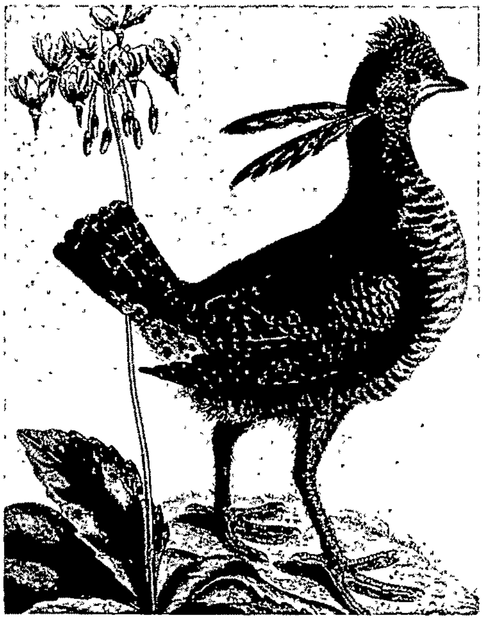

Fig. 1. Plate I, Appendix I, vol. I of Mark Catesby's *Natural History of Carolina, Florida and the Bahama Islands* (London, 1754), showing the heath hen and the plant *Meadia*.

the south and west.[7] One of Catesby's friends in Charleston was another Englishman, Thomas Cooper (Oxford, A.B., 1720), who had set himself up as a physician.[8] Catesby credited him with having "extraordinary business in his profession." Most likely, Cooper was the "Doctor of Physik" at whose house Catesby stayed and in whose garden he planted the bulbs which Sherard had sent him. Dr. Cooper was "among a little group in the South Carolina capital who were experimenting with antidotes for rattlesnake bite and who in the course of their experiments, 'bade fair to denude the city of its canine population.' "

The Scotsman Alexander Garden (1725-1791) came to Charleston in 1752 and became "the most important scientific figure of colonial Carolina."[9] His eminence was largely in botany and natural science rather than medicine.[10]

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[7] Frick & Stearns, *Mark Catesby*, pp 22-30.

[8] *Ibid.*, pp. 29-30.

[9] Joseph I. Waring, *A History of Medicine in South Carolina*, 3 vols. vol 1: 1670-1825; vol. 2: 1825-1900; vol. 3, 1900-1970 (n.p : South Carolina Medical Association, 1964-71), vol. 1, pp. 221-37.

[10] Edmund and Dorothy Smith Berkeley, *Dr. Alexander Garden of Charlestown* (Chapel Hill, Univ of North Carolina Press, 1969). William M. and M. S. C. Smallwood, *Natural History and the American Mind* (New York· Columbia Univ. Press, 1941), pp. 34, 92, 93, 94 f., 95, 104. Wilson Gee, "South Carolina botanists: biography and bibliography," *Bull. University of South Carolina*, Sept. 1918, no. 72, 14-16. Frick & Stearns, *Mark Catesby*, pp. 76, 8-, 105, 107.

Garden evaluated his physician-naturalist predecessors by stating that William Bull[11] of Charleston, who had obtained a doctorate in medicine from Leyden in 1734 under Boerhaave "was the only man in Charleston who had any acquaintance with natural history."[12] Garden also wondered, "how there should be one place abounding with so many marks of the divine wisdom and power, and not one rational eye to contemplate them."[13] He was also critical of the intellectual life of the planters. When his friend, John Lining, "turned planter," and gave his practice to Garden, he considered Lining a lost soul since the planters of South Carolina were "absolutely above every occupation but eating, drinking, lolling, smoking and sleeping, which five modes of action constitute the essence of their life and existence."[14]

Garden had obtained his M.D. at Marischal College at the University of Aberdeen, studying botany with Professor James Gordon, and later he continued his medical studies at Edinburgh where he gained further botanical knowledge at the garden presided over by Dr. Charles Alston, professor of botany. It was to Alston that he very naturally addressed his first botanical queries from America in January 1753. In 1754 he visited Cadwallader Colden in New York, and John Bartram and Benjamin Franklin in Philadelphia. At Colden's, he had the opportunity to see letters from Linnaeus. The trip seemed to make him even more dissatisfied with South Carolina, "a horrid country, where there is not a living soul who knows the least *iota* of natural history."[15] Garden engaged in a vast correspondence with Cadwallader Colden, Jane Colden, Dr. John Huxham of Plymouth, England, Drs. Robert Whytt and Charles Alston of Edinburgh, Dr. John Frederick Gronovius of Leyden, Rev. Stephen Hales, Messers. John Ellis, Phillip Miller, William Shipley and Peter Collinson of London, and eventually, Dr. Carolus Linnaeus of Sweden.

This long correspondence with Linnaeus and the shipment of specimens resulted in a firm friendship. In Linnaeus' *Systema Naturae,* 12th edition, descriptions of three new genera of plants, two new genera of fish, and sixty new species of serpents, insects and fish are attributed to Garden—his name being mentioned more than that of any other American correspondent. Although he did not discover as many new plants as John Bannister or John Bartram or publish catalogues as did Colden and John Clayton, Garden sent the Royal Society several reports which were read and published: accounts of the *Amphibious bipes* ("mud iguana," or siren of South Carolina), male and female cochineal insects and two new tortoises. He was elected to the Royal Society in 1773. He returned to England after the Revolution and became vice-president of the Royal Society in 1783.

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[11] Berkeley, *Alexander Garden,* pp 33, 35, 53, 145-47, 283. Waring, *History of Medicine in South Carolina,* vol. 1, pp. 53, 77, 107, 132, 183, 198, 222, 345. Eleanor W. Townshend, "William Bull, M.D. (1710-1791)," *Annals Med. Hist.,* n.s., 1935, *7:* 315.

[12] Quoted by Brooke Hindle, *The Pursuit of Science in Revolutionary America, 1735-1789* (Chapel Hill: Univ North Carolina Press for the Institute of Early American History and Culture, 1956), p. 37. It gives the source as a letter from Garden to Dr. James Parsons, May 5, 1955, John Nichols, *Literary Anecdotes of the Eighteenth Century* (London, 1812-15), vol. 5, p. 484n

[13] Hindle, *Pursuit of Science in Revolutionary America,* p. 50.

[14] *Ibid.,* pp. 50-51

[15] *Ibid.,* p. 53 Quoted from a letter, Garden to Ellis, about Jan. 1761, J. E. Smith (ed.), *A Selection from the Correspondence of Linnaeus* (London, 1821), vol. 1, p. 502.

Garden is credited with inspiring those who founded the Charleston Museum, particularly his apprentice, Dr. Peter Fayssoux.[16] It was Garden's practice, when a young man from Charleston went to London, to write his friend Ellis requesting a guided tour of the British Museum. Perhaps this practice stimulated the committee of the Charleston Library Society, which was charged in 1773 with "collecting materials for promoting a Natural History of the Province," to accomplish the founding of the Charleston Museum, the oldest surviving public museum in the U.S., in 1777.[17]

Samuel Latham Mitchell considered Garden "one of the most valuable labourers in promoting natural history in the eastern parts of North America." Today, he is probably most often remembered by the familiar but exotic Gardenia *(Gardenia Florida Jasminoides)* named for him by Linnaeus.

Garden's life and activities illustrate the workings of the "Natural history circle of 18th century America and Europe" and its close relationship with medicine as described by Brooke Hindle.[18] "By 1765 the Americans were playing an essential role in this international community and their work was applauded and used in Sweden, France, and the Netherlands, but most of it reached the continent through England. The American naturalists enjoyed the closest ties with England, but they were also developing direct contacts with one another. A heterogeneous group, they represented the beginning of the first scientific community in America."[19]

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[16] Berkeley, *Dr Alexander Garden,* pp. 144, 226-27, 270, 331. Waring, *History of Medicine in South Carolina,* vol. 1, pp. 82, 89, 96, 99, 100, 102, 105, 107, 119, 121, 132, 212, 231, 236, 341, 347, 376. Smallwood, *Natural History and the American Mind,* pp. 109-110. Kelly and Burrage, *American Medical Biography* (New York. D. Appleton, 1928), p. 401.

[17] For the complex history of the Charlestown Museum see: Smallwood, *Natural History and the American Mind,* pp. 22, 105, 108-11, 112, 119; Laura M. Bragg, "The birth of the museum idea in America," *Charleston Museum Quart.,* 1923, *1:* 2-4; William G. Mazych, "History of the Museum," *Bull. Charleston Museum,* 1907, *3:* "The period previous to 1798," no. 6, pp. 49-51; "The period from 1798 to 1850," no 7, pp. 57-66; "The period subsequent to 1850, no 8, pp. 69-79; Whitfield J. Bell, Jr., *A Cabinet of Curiosities; Five Episodes in the Evolution of American Museums* (Charlottesville: University Press of Virginia, 1967).

[18] Hindle, *Pursuit of Science in Revolutionary America;* see chap. 2, "The Natural History Circle," pp. 11-35, and chap. 3, "The Doctors: Naturalists and Physicians," pp. 36-58.

[19] *Ibid.,* p. 35.

The natural history circle was supported by commercial interests. By the 18th century, England was enjoying unparalleled advantages from her commerce and from the wealth it brought to some of her people. As her American colonies matured, political, religious, and commercial channels all became increasingly effective in the service of natural history.

Medicine, too, served natural history. One of the most remarkable things about the pursuit of natural history in the 18th century was the prominence of physicians in the effort. On both sides of the Atlantic, they formed such a vital part of the natural history circle that they might be said to have been its core. In England, the surgeons and physicians formed the largest single group among the scientific fellows of the Royal Society and it was they who accounted for much of the attention accorded natural history within the organization. Most of the leading naturalists on the continent were physicians: Boerhaave, Haller, Linnaeus, Gronovius, among them; while in England, both naturalists and patrons were drawn in large numbers from this group: Sir Hans Sloane, Dr. John Fothergill, John Hunter, and John James Dillenius.

The prominence of physicians in natural history was no accident and resulted from the medical training of the day which afforded an introduction to the study of the science of nature. At the progressive Schools of Padua, Leyden, and Edinburgh, and in the great hospitals of the City of London, medical students took formal courses in botany, chemistry, and anatomy, sometimes including comparative anatomy. Medical students were particularly directed toward botany, because of the predominance of vegetable remedies; this bias served to increase the great attention lavished upon that branch of natural history. These studies were seldom profound, but they did provide the best academic foundation then available in natural history, and often stimulated continuing interest and study.

Strikingly, all the physicians who contributed to the advance of natural history in America had experienced a strong Scottish influence; either they were themselves Scots, or they had received medical training in that country. The Edinburgh botanical school had been carried on by Charles Alston who taught botany (1739-1761). His successor, John Hope, became King's botanist and University Professor of Botany, 1761-1786. Dr. Robert Ramsey was the first professor of natural history in the Medical Department at the University of Edinburgh; he was succeeded by Rev. John Walker and he in turn by Robert Jameson in 1804. A notable list of American physicians who were interested in botany or natural history were Edinburgh students: John Morgan, Adam Kuhn, Benjamin Smith Barton, Samuel Latham Mitchill, Samuel Bard, Richard Kissam, David Hosack, John Lining, and Benjamin Waterhouse. Four Edinburgh-trained physicians were to become essential members in the international natural history circle: Cadwallader Colden in New York, Benjamin Smith Barton in Philadelphia, William Douglas in Boston, John Mitchell in Virginia, and Alexander Garden in Charleston.

Charleston became the commercial center for the agricultural South. Rice, cotton, and indigo produced wealth. This wealth gave the sons of affluent families in Charleston an opportunity to study with the great naturalists and physicians of Great Britain and the continent, and at Philadelphia. When these young men returned to Charleston, most of them followed the medical profession, but, in their leisure, many pursued some phase of natural history. These young men founded a museum, a library and agricultural society, and a scientific society, all of which became part of the social life of the planters, especially when they moved back to Charleston from their inland estates, where they spent the best days of the summer.[20]

One such physician-planter was John L. E. W. Shecut (1770-1836),[21] the son of French Huguenots. Shecut's early medical training was received under a friend of the family, Dr. David Ramsay, historian and physician. Shecut received his M.D. at Philadelphia in 1791. It was Shecut who helped to establish Charleston's first botanic garden. The Botanic Society, which emerged from the Medical Society, was founded in 1805. Although the Medical Society provided the Botanic Society with the funds and the land for a Botanic Garden, the garden did not survive. In 1806, Shecut published volume 1 of *Flora Caroliniensis,* the most extensive work on botany of the State published at that time and in 1813 Shecut founded the Antiquarian Society of South Carolina in 1813, which later became the Literary and Philosophical Society of South Carolina.[22] "The objects of this Society were to be primarily, the collection, arrangement and preservation of specimens in natural history, and of things rare, antique, curious and useful; and secondarily, the promotion and encouragement of the arts, sciences and literature, generally." Drs. Richard L. Latham, John L. E. W. Shecut, Isaac A. Johnson, John S. Trescott, and John Grimke, James E. B. Finley, David Ramsay, and Alexis De

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[20] Smallwood, *Natural History and the American Mind,* pp. 102-111. See also Everett Mendelsohn, "John Lining and his contribution to early American science," *Isis,* Sept. 1960, *51* · pp. 278-292.

[21] Gee, "South Carolina botanists," pp. 29-32; Smallwood, *Natural History and the American Mind,* pp. 104, 106, 11; Waring, *History of Medicine in South Carolina,* vol. 1, pp. 140, 143, 152, 157, 160, 237, 303, 325, 371. Eola Willia, "Sketch of the life of Dr. J. E. W. Shecut and of the origin of the Museum," *Bull. College of Charleston Museum,* April 1906, *2:* 27-32; Kelley and Burrage, *American Medical Biographies* (1920), pp. 1042-43; H. A. Kelly, *Cyclopedia of American Medical Biography* (Philadelphia: Saunders, 1912), pp.365-66.

[22] The history of the Literary and Philosophical Society of South Carolina is given in: Max Meisel, *A Bibliography of American Natural History, The Pioneer Century, 1769-1865,* repr. ed. (New York: Hafner Publishing Co., 1967), vol. 2, pp. 218-221

Carandeffez were the physician members. The non-medical members were John Drayton, Thomas Bennett, and the president, Stephen Elliott.

The Charleston Museum was transferred to the Literary and Philosophical Society of South Carolina in 1815. Like the "cabinet" at the American Philosophical Society or Charles Willson Peale's Museum in Philadelphia of 1785, it contained an incredible assortment, such as an:

> Indian Helment from the Sandwich Islands, presented 16th June, 1798 by Dr. Jas. Lynch, Head and craw of the pelican; Dr. Hahnbaum May 25th (1799), two petrefactions from a cave near the Sweet Springs in Botetourt County, Virginia; by Dr. Dart; 25th March 1803 and tooth of a mare, with a letter from Chancellor James by Dr. D. Ramsay. Dr. Dalcho, on March 23rd, 1805 presented, "Ornaments worn in the upper lip & round the ankle & wrists by the female Negroes of the Eastern Coast of Africa & an Assaygar used by the men."[23]

The Society strengthened the museum by purchasing the collections of Dr. Felix L'Herminier[24] and specimens were donated by such prominent citizens as Joel Poinsett and Stephen Elliott. In 1827, the Museum was turned over to the Medical College of South Carolina.

Three men are representative of the medical-natural history relationship of this period; Elliott, Poinsett, and Blanding.

Stephen Elliott (1771-1830) a banker, planter, and botanist, was a 1791 graduate of Yale.[25] He devoted most of his leisure to zoology, botany, and other sciences. During 1816-1824 he published in parts, *A Sketch of the Botany of South Carolina and Georgia* which eventually constituted two thick volumes and is one of the classics of American botany. Elliott's botanical collaborator had been Dr. James MacBride (1784-1807), also a Yale graduate.[26] Elliott helped to secure from the State Legislature an act incor-

[23] "The collections of the Charleston Library Society from 1798 to 1815," *Bull. College of Charleston Museum*, 1906, *2* (6), 47-54. Letter from J.L.E.W. Shecut to Samuel Latham Mitchill, Dec. 24, 1817, Historical Society of Pennsylvania.

[24] Dr. Felix L'Herminier from Guadeloupe came to Charleston c. 1815 with an excellent collection of specimens which were purchased by the state and city jointly. He was curator of the collection but resigned in 1819 See *South Carolina Hist. Mag* , 1948, *49:* 142; Waring, *History of Medicine in South Carolina*, vol. 1, p. 254; *Bull. College of Charleston Museum*, 1904, *2* (4), 29, and 1907, *3* (7): 57.

[25] Gee, "South Carolina botanists," pp 35-37, Professor George Rogers of Southern Georgia College is working on a biography; Waring, *History of Medicine in South Carolina*, vol 1, pp. 163, 169, 211, 264, 306; vol. 2, pp. 73, 74, 76; Smallwood *Natural History and the American Mind.*, pp. 105, 106-108, 111; J. H. Barnhart, plates of publication of the "Sketch" in *Torrey Bot Club Bull.*, Dec 1901, *28:* 680-88. N. L Britton, "Note on the herbarium of Stephen Elliott," *ibid.*, 1894, 21: 80-81, *Garden & Forest*, May 23, 1894, *7*: 201-02, port. H W. Ravenel, "Stephen Elliott," *Bot. Gaz.*, 1883, *8* (7): 249-53.

[26] J. Ewan (ed.), *A Sketch of the Botany of South Carolina and Georgia*, by Stephen Elliott. Classica Botanica Americana, 6 (New York: Hafner Publishing Co., 1971, facs. repr. of 1816-24 ed.) Reviewed in *Torreya, 1972, 99: 209, Jeanette E. Graustein, Thomas Nuttall, Naturalist Explorations in America,* 1808-1841

porating the Medical College of South Carolina, which opened in 1824 and graduated its first class in 1825 with Stephen Elliott in the chair of natural history and botany. One of its first acts was to grant him the honorary degree of M.D. Elliott's name is commemorated in the rare and beautiful shrub, *Elliottia* and various species, *Carex elliotti, Juncus elliotti, Solidago elliotti,* and *Aster elliotti.*

Joel Roberts Poinsett (1779-1851) was the son of Elisha Poinsett, a prominent physician of Charleston.[27] J. R. Poinsett had attended medical school at Edinburgh and he maintained an interest in natural history throughout his life. As a governmental agent, he continued to promote these interests; as Secretary of War under Van Buren, he encouraged the Wilkes Expedition of 1838 and was instrumental in the founding, in 1840, of the National Institute for the Promotion of Science and Useful Arts. At the time he was minister to Mexico, he introduced the Poinsettia, which is named for him.

Dr. William Blanding (1773-1857) was not of the Charleston group, but lived and did his natural history work at Camden, some 140 miles away.[28] A member of the Academy of Natural Sciences of Philadelphia, he sent specimens of snakes, lizards, and salamanders to Dr. Richard Harlan and obtained subscribers for Harlan's *Fauna Americana* (1825). Blanding's turtle was named for him by Dr. J. E. Holbrook.

The period from 1840 to the beginning of the Civil War was one of intense activity in natural history. As Dr. John F. Barrett wrote to Dr. Lewis R. Gibbes in 1843, "These are stirring times of ism's, ology's, mormons, millerites, mermaids, and comets."[29] Two major forces were at play: there was an

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(Boston: Harvard Univ Press, 1967), pp. 95, 219; Gee, "South Carolina botanists," pp. 33-34; Meisel, *Bibliography of American Natural History*, vol. 2, pp. 226, 245; vol. 3, p. 383; Waring, *History of Medicine in South Carolina*, vol. 1, pp. 147, 264, Kelly and Burrage, *Dict. Am. Med. Biog.* (1928), p. 768.

[27] Claude Henry Neuffer, *The Christopher Happoldt Journal*, The Charleston Museum, Charleston, S.C., 1960, pp. 46, 48; *Dictionary of American Biography*, vol 15, pp. 30-32; Joseph Ewan, *A Short History of Botany in the United States* (New York. Hafner Publishing Co., 1969) pp. 6-8; Meisel, *Bibliography of American Natural History*, vol 2, pp. 650-673; William C. Blizzard, "The Poinsettia," *Sports and Travel*, Nov.-Dec. 1974, 9-12.

[28] Waring, *History of Medicine in South Carolina*, vol. 1, pp. 206, 326, 377; Meisel, *Bibliography of American Natural History*, vol. 2, pp. 134, 158; Philadelphia Academy of Natural Science (1812); Blanding's turtle, *Cistoda Blandingii*, was named by Holbrook. John Edwards Holbrook, *North American Herpetology; or a Description of the Reptiles Inhabiting the United States*, 1st ed (Boston, 1836-40), vol. 3, p. 35; 2nd ed. (Philadelphia, 1842-43), vol 1, p. 39, pl. 3).

[29] Smallwood, *Natural History and the American Mind*, p. 42, quoted from a MS, Charleston Museum, letter, John P. Barrett to Lewis R Gibbes, Charlottesville, S.C., March 27, 1843 James Harvey Young called my attention to the fact that the mermaid in the quotation was most likely the mermaid of P. T. Barnum as mentioned in Neil Harris, *Humbug; The Art of P. T. Barnum* (Boston: Little, Brown, 1973), pp. 5, 62-67, 95, 105, 173, 213, 235, 311-12. This work notes that John Bachman denounced in the local newspapers Barnum's "Fejee Mermaid" as a fraud. He was joined by L. R. Gibbes and J. Edwards Holbrook.

increasing specialization by the naturalists, who concentrated their efforts on certain phyla or groups of animals; and the separation of natural history from a strong medical alliance was initiated. Natural history specialization was popular in French centers and American medical students were encouraged by this practice. It was at this time in the United States that botany, zoology, mineralogy, and comparative anatomy became increasingly recognized academic studies and severed their medical affiliations. For example, Asa Gray, Louis Agassiz, Benjamin Silliman, and Jeffries Wyman, all M.D.'s, headed their departments at Harvard and Yale. The rise of natural history societies, such as the Academy of Natural Sciences at Philadelphia (1812),[30] the Boston Society of Natural History (1830)[31] and the Elliott Society for Natural History (1853)[32] of Charleston, encouraged communication and specialization. Earlier medical journals had much natural history: *Medical Repository* (1797-1824);[33] *Philadelphia Medical and Physical Journal* (1804-1807) and Supplement (1806-1814);[34] *The American Medical and Philosophical Register* (1810-1814);[35] the *New York Medical and Physical Journal* (1822-1826);[36] *The Western Journal of the Medical and Physical Sciences* (1827-1836);[37] *Transylvania Journal of Medicine and the Associated Sciences*, Lexington, Ky. (1827-1837);[38] and the *Charleston Medical Journal and Review* (1846-1855).[39] There was a decrease of natural history in medical journals after 1840, as topical periodicals came into existence.

This same period (1840 until the Civil War) represents the high water mark of the Charleston naturalists. It saw the publication of classics: J. E. Holbrook's *North American Herpetology*, 4 volumes (1836-1838), second edition, 5 volumes (1842-1843); J. J. Audubon and J. Bachman, *Viviparous Quadrupeds of North America*, three volumes (1845-1848); Edmund Ravenel's *Fungi Caroliniani Exsiccati*, 5 volumes (1853-1860); and Holbrook's *The Ichthyology of South Carolina* (1855, 1857, 1860). All of these works attained international repute.

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[30] History of the Academy of Natural Science is discussed in Smallwood, *Natural History and the American Mind*, pp. 121, 143, 155-65, 280; Meisel, *Bibliography of American Natural History*, vol. 2, pp. 130-218; George H. Daniels, *American Science in the Age of Jackson* (New York: Columbia Univ. Press, 1968), pp. 16, 30.

[31] Daniels, *American Science in the Age of Jackson*, p. 72; Graustein, *Thomas Nuttall*, pp. 226, 249, 270, 330, 349, 370, 373; Meisel, *Bibliography of American Natural History*, vol. 2, pp. 457-463; *Boston Society of Natural History, Anniversary Memoirs, 1830-1880* (Boston, The Society, 1880).

[32] Meisel, *Bibliography of American Natural History*, vol. 3, pp. 164-65; Smallwood, *Natural History and the American Mind*, pp. 112-119.

[33] Meisel, *op. cit.*, vol. 2, pp. 64-65; Smallwood, *op cit.*, p. 162.

[34] Meisel, *op. cit.*, vol. 2, pp. 106-111.

[35] *Ibid.*, pp. 128-130.

[36] *Ibid.*, pp. 414-15

[37] *Ibid.*, pp. 453-54.

[38] *Ibid.*, pp. 454-57.

[39] *Ibid.*, vol. 3, pp. 11-14.

John Edwards Holbrook (1784-1871) was educated at Brown University and obtained his M.D. from the University of Pennsylvania in 1814.[40] He then went to Europe where he attended the medical school at Edinburgh, visiting Britain, Germany, Italy, and France. In Paris he studied at the Jardin des Plantes and became a life-long friend of Vallenciennes, Dumeril, and Bibron. On returning to Charleston, he became professor of anatomy (1824-1854). Holbrook's work on reptiles was described by Agassiz thus:

> He [Holbrook] first compelled European recognition of American science by the accuracy and originality of his investigations. I well remember the impression made in Europe more than five and thirty years ago, by his work, on North American Reptiles. Before then, the supercilious English question so effectually answered since, "Who reads an American book?" might have been repeated in another form, "Who ever saw an American scientific work?" But Holbrooks' elaborate history of American Herpetology was far above any previous work on the same subject. In that branch of investigation Europe had at that time nothing which could compare with it.

Many of Holbrook's students and friends, other physician naturalists, contributed specimens for his work and Thomas M. Logan, M.D.[41] did some of the drawings for his work.

Edmund Ravenel (1797-1871)[42] received the degree, doctor of medicine, at the University of Pennsylvania in 1814 and was one of the planners of the Medical College where he became professor of chemistry and pharmacy and later dean. In 1834 he published a catalogue of shells which was said to be the first of its kind in America. His *Echinidae, Recent and Fossil of South Carolina,* 1848, is a major contribution to that period.

J. J. Audubon derived much of the support for his work from the physician-naturalists of the period,[43] particularly in Boston, Baltimore, and to some degree, in Philadelphia. When Audubon went to Charleston in 1831 to observe birds in the South, he was shepherded by Rev. John Bachman,[44] who was Charleston's benevolent minister of St. John's Lutheran Church and a friend of all the naturalists and physicians of that city. Bachman had attended

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[40] Smallwood, *Natural History and the American Mind.*, pp. 105, 111, 114-16, 191, 343; *The Christopher Happoldt Journal*, p. 81; Waring, *History of Medicine in South Carolina*, vol. 1, pp. 73, 201, 243, 271, 288; Theodore Gill, "Biographical Memoir of John Edwards Holbrook, 1794-1871," read before the National Academy of Sciences, Washington, D.C., April 22, 1903; T. L. Ogier, "A Memoir of Dr. John Edwards Holbrook," read before the Medical Society of South Carolina, in accordance with the resolutions passed at a special meeting, commemorative of the death of this Distinguished Member, Charleston, November 1, 1871, "Notice of the Life and Character of Dr. John E. Holbrook of Charleston, S.D ," presented at a meeting of the Natural History Society of Boston, Oct. 18, 1871, by Louis Agassiz.

[41] Waring, *History of Medicine in South Carolina*, vol. 2, pp. 46, 62, 258.

[42] Smallwood, *Natural History and the American Mind*, p. 119; Waring, *History of Medicine in South Carolina*, vol. 2, pp. 73, 94, 287; Meisel, *Bibliography of American Natural History*, vol. 3, p. 643.

[43] Among J. J. Audubon's Boston physician-naturalists supports were: Drs. George Cheyne Shattuck, George Parkman (his agent), Thomas Mayo Brewer, and John Collins Warren; see G. E. Gifford, Jr., "Shattuck's Bunting," *Harvard Med. Alumni Bull.*, Summer 1961, *36* (1); 10-15, reprinted in *Mass. Audubon Mag.*,

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Winter 1962, *43* (2): 68-75, *idem*, "Parkman's Wren," *Harvard Med. Alumni Bull*, Spring 1962, *36* (4), 26-29; *idem*, "Thomas Mayo Brewer, M.D.—A blackbird and duck, sparrow and mole," *ibid*, Fall 1962, *37* (1): 32-35, reprinted in *Mass. Audubon*, 1969, *54*: 37-38; *idem*, "Dr. Warren's mastodon," *Harvard Med Alumni Bull.*, Winter 1964, *38* (3): 22-27, Waldemar H. Fries, *The Double Elephant Folio* (Chicago: American Library Association, 1973), pp. 67, 72, 98, 155, 184, 187, 249, 320, 449 (Dr. George Cheyne Shattuck), pp 73, 187, 320, 321 (George C. Shattuck, Jr.), pp 67-68, 72, 83, 84, 155, 159, 187, 260, 320 (Dr. George Parkman), pp. 101, 126, 127-28 (Dr. T. M Brewer); p. 72 (Dr. J. C. Warren). For Audubon's relationship with Baltimore, see G E. Gifford, Jr., "John James Audubon and Gideon B. Smith, M.D." *Bull Hist Med.*, Sept.-Oct. 1951, *25*: 475-77; *idem*, "John James Audubon's Baltimore physician-patrons," *Bull. Univ. Maryland School of Med.*, Jan. 1964, *49*: 14-20. In Philadelphia, Audubon received help particularly from Richard Harland, M.D., and Samuel George Morton, M.D For Harlan, see W. B. McDaniel, 2d (ed.), "Letters of John James Audubon (1785-1851) to Richard Harlan (1796-1843) and John K. Townsend (1809-1851); letter of John Bachman (1790-1874) to Harlan," *College of Physicians of Philadelphia, Fugitive Leaves from the Library*, Oct. 1863, *3* (64), 196-210; Meisel, *Bibliography of American Natural History*, vol. 3, pp. 590-91; J. J. Audubon, *Ornithological Biography* (Edinburgh: Adam Black, 1831), vol 1, pp. 441-43, Harlan's Hawk is plate LXXXVI of *The Birds of America;* Howard Corning (ed.), *Letters of John James Audubon*, 1826-1840 (Boston: Club of Odd Volumes, 1930), vol. 1, pp. 126-30, 136, 137, 144, 148, 150, 153, 155, 159, 162, 165, 166, 166, 169, 170, 176, 180, 183, 186, 190, 192, 194, 195, 217, 229, 261, 264, 276; vol 2, pp. 10, 11, 14, 16, 23, 58, 70, 74, 77, 81, 105, 127, 131, 138, 163, 191, 197, 198, 222, The American Philosophical Society has fourteen letters from J. J. Audubon to Dr. Samuel G Morton; Howard Corning (ed) *Journal of John James Audubon, Made while Obtaining Subscriptions to His "Birds of America," 1840-1843* (Boston: Club of Odd Volumes, 1929), p 25, Fries, *The Double Elephant Folio*, pp. 3, 34, 39, 56, 61, 98, 101, 153, 225, 228, 445, Albert E. Lownes, "The Audubon letters," *The Auk*, April 1935, *52*: 154-68—letter II is from Audubon to Harlan, Edinburgh, Nov. 29, 1830. Letter from Audubon to Harlan, May 26, 1833, Princeton University Library, three letters at Harvard University, Houghton Library, J J. Audubon to Richard Harlan, Dec. 8, 1831, Harlan to Audubon, Jan. 27, 1832, R. Harlan to J. Bachman, Feb 8, 1837; letter from Audubon to Harlan, March 17, 1834, is at the American Philosophical Society Library. Maria Audubon, *Audubon and His Journals*, 2 vols. (London: John C. Nimmo, 1948), vol. 1, pp. 57, 65, 124, 247, 300, 453; vol. 2, pp. 473, 501 (reprinted by Dover); Smallwood, *Natural History and the American Mind*, pp 138, 140; Francis Hobart Herrick, *Audubon, the Naturalist: A History of His Life and Time*, 2 vol. (New York: D. Appleton, 1917), vol. 1, p. 311; vol. 2, pp. 154, 171, 172; Henry Simpson, *Lives of Eminent Philadelphians, Now Deceased*, Collected from Original and Authentic Sources (Philadelphia, 1859), pp. 247-266, Samuel X. Radbill (ed.), "The autobiographical ana of Robley Dunglison, M.D.," *Trans. Amer Philos. Soc.*, n.s., 1963, *53* (8), pp. 78, 102, 120-23, 133, 198; *Dictionary of American Biography*, vol 7, pp. 273-74; Fries, *Double Elephant Folio*, pp 105, 110, 226-27

[44] "John Bachman, a biography," *Happoldt Journal*, pp 29-118; see review by Joseph Ewan, "John Bachman and the Happoldt European Journal," *Rhodora*, 1962, *64* (757): 92-94. Daniels, *American Science in the Age of Jackson*, p 203; Alexander Sprunt, Jr , "Audubon and Bachman—Naturalist and Clergyman," *Audubon Magazine*, 1951, 53: 76-83 ff Bachman's defenses of Audubon are: John Bachman, "Retrospective criticism Remarks in defense of the author of the Birds of America," *Loudon's Mag. Nat Hist.*, 1834, *7*: 164-75; "An account of some experiments made of the habits of the vultures inhabiting Carolina . . ," *J. Boston Soc Nat. Hist.*, 1834, *1*: 15-31 See Herrick, *Audubon, the Naturalist*, vol. 2, pp 54-84; William M Stanton, *The Leopard's Spots: Scientific Attitudes toward Race in America, 1815-1859* (Chicago: Univ of Chicago Press, 1960); Smallwood, *Natural History and the American Mind*, pp. 111-14, 116-18; Meisel, *Bibliography of American Natural History*, vol. 3, p. 531; Peggy Robbins, " 'A Wonderfully Hospitable Place': Audubon in Carolina," *South Carolina Wildlife*, March-Apr. 1975, *22* (2), 9-15.

Williams College and received an honorary degree from the University of Berlin in 1838. Bachman, whose two daughters would later marry Audubon's two sons, became part of the Audubon project to publish *The Birds of America*. Bachman's friends became Audubon supporters, for example, the two Drs. Gibbes, and Drs. Samuel Wilson, Leitner, Strobel, and E. Ravenel.

Robert Wilson Gibbes (1809-1866), who practiced in Columbia, S.C., had acquired a large and valuable collection of fossils, paleontology, geology, mineralogy, and conchology. He befriended Audubon, who called him a man of "taste and talent." Lewis R. Gibbes provided assistance in supplying Latin descriptions for the quadrupeds.[45]

Lewis R. Gibbes[46] (1810-1840) received his M.D. from the Medical College of South Carolina in 1836, having published *A Catalogue of the Phaenogamous Plants of Columbia, S.C. and Its Vicinity* in 1835. Like Holbrook, he went to Paris (1836-1837) and visited the Jardin des Plantes and exchanged conchological specimens. On returning to Charleston, Gibbes became professor of mathematics in the College of Charleston, a position he held for 54 years. He wrote on astronomy, mechanics, physics, and chemistry and L. R. Gibbes was president of the Elliott Society of Natural History for 37 years (1853-1889).

Dr. Samuel Wilson, Bachman's friend and physician, also a friend of Dr. Richard Harlan, befriended Audubon as well, and supplied him with specimens for *The Viviparous Quadrupeds*. His son, Dr. Samuel Wilson, Jr. became interested in ornithology after his return from medical school.[47]

The young collector, Dr. Frederick Leitner,[48] gathered specimens for Bachman and Audubon in the Florida Keys. Dr. B. B. Stroebel,[49] a former

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[45] Robert M. Jellison and Phillip S. Swartz, "The scientific interests of R. W. Gibbes," *South Carolina Hist. Mag.*, Apr. 1965, *66:* 77-97.

[46] Smallwood, *Natural History and the American Mind*, pp. 111-113; Happoldt Journal, pp 70-80; Waring, *History of Medicine in South Carolina*, vol. 2, p 318; Gee, "South Carolina botanists, pp. 42-45; J. H. Easterby, *History of the College of Charleston* (Trustees of the College, 1935), pp. 96, 100-01, 103, 107, 108, 122, 128, 138, 148; Kelly, *Cyclopedia of American Medical Biography*, vol. 1, p. 337.

[47] Waring, *History of Medicine in South Carolina*, vol. 1; *Happoldt Journal*, pp. 61, 73; Corning, *Letters*, vol. 1, pp. 146, 148; vol. 2, pp. 32, 39, 52, 103, 115, 119, 121, 131, 134, 189, 199, 231, 268; *Journals*, vol. 2, p. 42; *Ornithological Biography*, vol. 2, pp. 14, 60, 337, 404, 446, 473, vol 3, p. 549, vol. 4, p. 199, vol. 5, p. 257; C. Bachman, *John Bachman*, pp. 62, 67, 138, 141, 143, 145.

[48] G. E. Gifford, Jr., "Edward Frederick Leitner (1812-1838), Physician-Botanist," *Bull. Hist. Med.*, 1972, *46* (6), 568-90.

[49] E. Ashby Hammond, "Notes on the medical history of Key West, 1822-1832," *Florida Hist. Quart.*, 1967, *46* (1), 93-110, *idem*, "Dr. Strobel's account of John J. Audubon," *The Auk*, 1963, *80* (4): 462-66; *idem*, "Dr. Strobel's reports on Southeast Florida, 1836," *Tequesta*, 1961, *12:* 65-75; *idem*, "Wreckers and wrecking on the Florida Reef, 1828-1832," *Florida Hist. Quart.*, 1963, *41* (3): 239-73; Katherine Hall Proby, *Audubon in Florida* (Coral Gables: Univ. of Miami Press, 1974), pp. 41, 45, 46, 94, 193, 198, 199, 200, 242, 244, 252, 262, 263, 267, 270 353; *Ornithological Biography*, vol 2, pp. 49, XVI, 351, 375, 382, 383, 396, 448, 480; vol. 3, pp. 160, 544,

Charlestonian who was town physician of Key West, sent shells, bird skins, and tropical plants to Bachman and Audubon and hosted Audubon in Key West. Dr. John Perkins Barrett,[50] (1795-1859) who had received an M.D. from The New York College of Physicians and Surgeons collected specimens for both J. E. Holbrook and Bachman, and became a correspondent of Audubon.

Audubon wrote of his Charleston friends: "It is impossible to do justice to the generous feeling of the Charlestonians, or to their extreme kindness towards me. Many of the gentlemen took the greatest interest in my pursuits; one, Dr. Wilson, presented me with an excellent Newfoundland dog, and other valuable memorials of his regard. Another, Dr. Ravenel, gave me a collection of shells from the adjacent waters."[51] As a token of his esteem for the Charlestonians, Audubon placed a vignette-landscape of Charleston and Fort Sumter in the plate of the long-billed curlew (Fig. 2).[52]

The apogee of the relationship of medicine and natural history in Charleston occurred in 1850. Louis Agassiz, a Swiss who became a leading zoologist in the U.S., was invited to Charleston by Dr. J. E. Holbrook, who entertained the great man at his plantation, "Hollow-tree."[53] Here Agassiz "basked in the admiration" of local naturalists, Dr. Lewis R. Gibbes and Robert W. Gibbes, Henry W. Ravenel, and Francis Holmes, and earned the undying admiration and respect of Charleston. Agassiz was in Charleston to attend the third meeting of the American Association for the Advancement of Science, under the presidency of A. D. Bache. Papers were given by H. W. Ravenel, R. W. Gibbes, J. E. Holbrook, L. Agassiz, John Bachman, M. Tuomey, St. Julien Ravenel, L. R. Gibbes, Edmund Ravenel, and F. S. Holmes. While there, Agassiz lectured on comparative anatomy to the students of the Medical College, and was invited to return as professor in the medical school in the next two years. When in Charleston, he established an oceanographic

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548, 550. *Happoldt Journal*, pp. 44, 73; Waring, *History of Medicine in South Carolina*, vol. 2, pp. 30, 87, 113, 304.

[50] Waring, *op. cit.*, vol. 2, pp. 112, 200-01, 325; Smallwood, *Natural History and the American Mind*, p. 112; Stanton, *Leopard's Spots*, p 129. Holbrook named a fish *Boleosoma Barratti*, "Fishes of Florida, Georgia, etc," *J. Acad. Nat. Sci. Phila*, 2nd ser., May 1855, *3*· 56-59, pl. 6 See Holbrook's *North American Herpetology* (1842), vol 2, preface, *Happoldt Journal*, p. 73: "We obtained a specimen (white weasel) from Abbeville in South Carolina from our friend Dr. Barrett, a close observer and a good naturalist." "This beautiful little species I have dedicated to Dr. John P. Barrett of Abbeville District of South Carolina, an excellent naturalist who has done much for the advancement of Zoology and Botany." See *Quadrupeds of North America* (1851), vol. 2, pp 178, 279.

[51] Corning, *Letters of Audubon*, vol. 1, p. 148.

[52] J. J. Audubon, *Birds of America*, 8°, 1844, vol. 7, p. 105, plate, 435.

[53] W. Curtis Worthington, Jr, "Agassiz: the Charleston interludes," *Sesquicentennial 1824-1974, College of Medicine, Medical University of South Carolina, Charleston, S.C.* (Medical Univ of South Carolina, 1974), pp. 57-68.

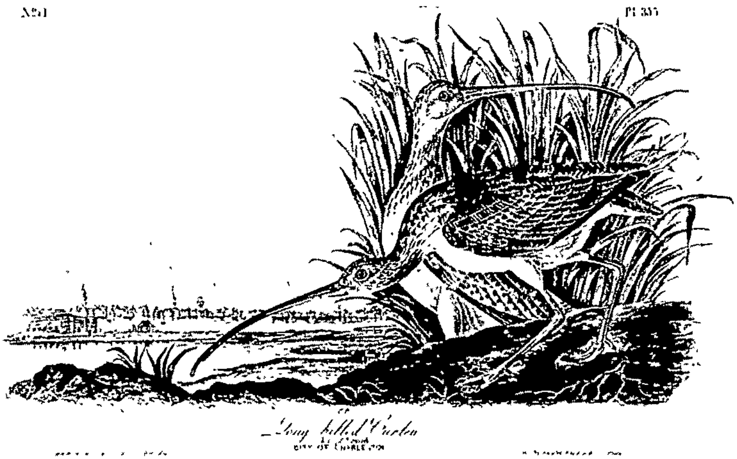

Fig. 2. Plate 435, J. J. Audubon *Birds of America*, Octavo Edition, 1844, Vol. VII, p. 105.

laboratory on Sullivan's Island. In 1850, Agassiz recommended forming a museum in Charleston composed of the members from the old museum in the medical college, the resolution being adopted at the AAAS meeting. In 1851, the Museum of Natural History in the College of Charleston was dedicated with a speech by Agassiz and a prayer by Rev. John Bachman. During the winter of 1853, Agassiz contracted typhoid fever and was treated by St. Julien Ravenel, who is remembered as an agricultural chemist! After all, these were *physician*-naturalists.

In drawing up the plan for the museum, Agassiz noted, "Young physicians, feeling an interest in the growth of the collection, should also be patronized, so far as to allow them a convenient place where they could work for the museum while they were waiting for patients."[54]

More practically, Agassiz's visit stimulated the formation of the Elliott Society of Natural History in 1853 with Bachman as the first president and L. R. Gibbes succeeding him from 1853-1889. Ten of the thirteen curators of this organization were physicians.[55]

At the height of the natural history movement in the 19th century, the phenomenon of parallelism is evident. In the large seaboard cities of Boston, Philadelphia, and Charleston, all with an established natural history tradition, there were men whose interests were similar and between whom there was often correspondence. Consequently, the Charleston physician-naturalists maintained ties with their colleagues, not always but most often, other physician-naturalists, in other cities. The Elliott Society of Natural History had as sister societies, The Boston Society of Natural History and the Academy of Natural Sciences of Philadelphia.

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[54] *Bull. College of Charleston Museum*, 1907, *3* (7), 61

[55] Waring, *History of Medicine in South Carolina*, vol. 2, p 288.

For example:

	Charleston	*Philadelphia*	*Boston*
Botany[56]	J.L.E. Shecut	B.S. Barton	J. Bigelow
(early)	S. Elliott	W.P.C. Barton	
	J. MacBride		
(later)[57]	J.H. Mellichamp		A. Gray
	H.W. Ravenel		
Cryptogamic Botany[58]	H.W. Ravenel		W.G. Farlow
			E. Tuckerman
Ichthology[59]	J.E. Holbrook	C.A. Lesueur	D.H. Storer
		(not an M.D.)	L. Agassiz
Zoology[60]	W. Blanding		
	L.R. Gibbes	R. Harlan	L. Agassiz
Conchology[61]	E. Ravenel	I. Lea	A. Binney
			A.A. Gould
			D.H. Storer
Physical Anthropology[62]	J. Bachman	S.G. Morton	

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[56] James Macbride (1784-1817) graduated from Yale in 1805 and studied medicine See Howard A. Kelly, *Some American Medical Botanists* (Troy, N.Y . Southworth, 1914), pp. 118-19 A copy of the 1816 part of Elliott's *A Sketch of the Botany of South Carolina and Georgia* (which was published in parts from 1816 to 1824), autographed by McBride and dated 1817, is in the Power-Gifford Library, Ashland, Mass. There are 24 letters from James Macbride to Asa Gray at Gray Herbarium (Papers of Stephen Elliott at Gray Herbarium). Philip M. Hamer, *A Guide to Archives and Manuscripts in the United States* (New Haven: Yale Univ. Press, 1961), p 260.

[57] Joseph Hinson Mellichamp (2828-1903) was an 1852 graduate of the Medical College of Charleston and a botanist He corresponded with Asa Gray. "His good judgment in making observations and clear statements of the results brought him the correspondence and esteem of Doctors Gray, Englemann and other masters of the science "—quoted in Gee, "South Carolina botanists," p. 51, from W. H. Canby, *Torreya,* 1904, *4* (1): 8-10. See Waring, *History of Medicine in South Carolina,* vol. 2, pp. 264-265

[58] Henry William Ravenel (1814-1887), the son of Dr. Henry Ravenel, was described by Gee, *op cit.*, p. 38: "With the probable exception of the Rev Moses A. Curtis he was the only American of his time who knew specifically the fungi of the United States, and it is doubtful whether any other botanist has covered so wide a range of plants." He was a correspondent of the Academy of Natural Sciences in Philadelphia and visited Boston, July 11-Aug. 9, 1853. See A. Hunter Dupree, *Asa Gray* (Cambridge. Belknap Press of Harvard Univ. Press, 1959), pp 201-310 329030. A. R. Childs (ed), *The Private Journal of Henry William Ravenel* (Columbia: Univ. of South Carolina Press, 1947). Letters from Audubon to Dr Henry Ravenel, Corning, *Letters of Audubon,* vol 1, pp. 145, 147, 154, 192, vol. 2, p. 32. Ravenel corresponded with the Bostonians, Edward Tuckerman (1817-1886) the lichenologist and William Gibson Farlow (1844-1919) the algologist and fungologist There are 40 letters to Tuckerman (from July 12, 1848-July 29, 1872) in the American Antiquarian Association, Worcester, Mass. Copies of these letters are in the Charleston Museum. There are six letters from Farlow to Ravenel (1878-1882) in the Charleston Museum

[59] J. E. Holbrook was a friend of Louis Agassiz quoted in J E Holbrook, Theodore Gill, *Biographical*

The Civil War administered the coup-de-grace to the already waning physician-naturalist endeavor. Medical schools were no longer teaching botany since pharmacy had become an established profession. Consequently, fewer physicians were exposed to academic botany. Local plants and animals, and types of minerals had been discovered; the collectors were now focusing their attention on the western species and those to be found in the area encountered in exploration of trade. Natural history itself had become many specialties; botany, zoology, mineralogy, entomology, ornithology, comparative zoology, herpetology, and the like.

Memoir of J. E. Holbrook (Washington: National Academy of Science, 1904), Edward Lurie, *Louis Agassiz, A Life in Science* (Chicago: Univ. of Chicago Press, 1960) Charles Alexandre Lesueur (1778-1816) was at New Harmony and Philadelphia. See Robert Williams Glenroie Vail, "The American Sketchbooks of Charles Alexandre LeSueur, 1816-1837," *Proc. American Antiquarian Society,* Worcester, Mass., April 1938. Also John W. Wells in *Dict. Sci. Biog.,* vol. 8, pp. 266-67.

[60] William Blanding (see n. 26) and Lewis R Gibbes (see n. 44). Copies of two letters from L. R. Gibbes to A. A. Gould, Jan. 19, 1833, and Sept. 19, 1837, are in the Charleston Museum. In the 1837 letter Gibbes states he had called on Gould in Sept. 1834 "but had not the pleasure of seeing you." Gibbes also states that Gould had visited him in 1830.

[61] Edmund Ravenel (1797-1871) was a very active shell collector. According to Waring (*History of Medicine in South Carolina,* vol. 2, pp. 287-88) "During the summer months he practiced on Sullivan's Island and devoted much time to conchology, gathering a large and valuable collection of shells, a part of which is still preserved in the Charleston Museum In 1834 he published a Catalogue of Shells which was said to be the first of its kind in America and corresponded with many high authorities in the field of conchology. . . He contributed papers to the Proceedings of the Elliott Society of Natural History, which was formed in Charleston in 1853." He was author of *Catalogues of the Mollusca of South Carolina,* 1834, 1875, and contributed to *Proceedings Academy of Natural Science,* Philadelphia, 1844, 1861. See Kelly and Burrage, *Dict. Am. Med. Biog.* (1928), pp 1012-13, and *American Malacologists, A National Register of Professional and Amateur Malacologists and Private Shell Collectors and Biographies of Early American Mollusk Workers Born Between 1618 and 1900* (Falls Church, Va., 1973), p 147 Ravenel corresponded with the Bostonians, Amos Binney, D. H. Storer and A A. Gould. For biographical data on Binney, see Smallwood, *Natural History and the American Mind,* pp. 119, 185, 187, 188; Meisel, *Bibliography of American Natural History,* vol. 2, pp. 459, 463, 464, 470, 474, 477, 478, 479, 485, 648. For D. H. Storer, see Kelly and Burrage, *Dict. Am. Med. Biog* (1920), pp. 1112-13; G. E. Gifford, Jr. "The Ichthyologist Dean," *Harvard Med. Alumni Bull.,* 1964, *39* (1), 22-27; *American Malacologists,* p. 162; Meisel, *op. cit.,* vol. 1, p. 232. For A. A. Gould, see George E. Gifford, Jr., "Forgotten figure in the ether controversy," *Harvard Med. Alumni Bull.,* 1965, *40.* 14-19. and *idem, Dict. Sci. Biog.,* Vol. 5, pp. 477-79. In the Charleston Museum there are 11 letters from Binney to Ravenel (1821-1853). Isaac Lea (1792-1886) of Philadelphia was that city's most eminent conchologist. See Whitfield J. Bell, Jr., in *Dict Sci. Biog.,* vol. 8, pp. 103-04, and Smallwood, *op. cit.,* p. 119, quoting a letter from Lea to Ravenel, Nov. 29, 1831. In the Charleston Museum there are letters to Edmund Ravenel from D H. Storer (1831-1846), S. G. Morton (1832-1843) and Isaac Lea (12 letters, 1831-1860)

[62] Samuel George Morton (1799-1851) studied medicine with Dr. Joseph Parrish of Philadelphia who had so many pupils that he associated with several young instructors, one of whom was Richard Harlan. Harlan influenced Morton who had a fondness for natural history. Morton taught anatomy, 1830-35-36, and in 1839 he was elected professor of anatomy in Pennsylvania College. He is remembered for his work *Crania Americana* (1839) and *Crania Aegyptica* (1845). Morton's studies led him to the conclusion that human races are of diverse origin. Louis Agassiz accepted in the main Morton's views. Morton's most bitter opponent was Rev. John Bachman who wrote, *The Doctrine of the Unity of the Human Race Examined on the Principles of Science* (Charleston, S.C., 1850). See Kelly and Burrage, *Dict. Am. Med. Biog.* (1920), pp. 822-25; Lurie, *Louis*

In Charleston, the physician-naturalists continued to be amateurs and non-academic. Not until 1900 was a chair of biology and geology established in the College of Charleston. George Hall Ashley, Ph.D., was named professor and curator. When the Civil War destroyed the economic base, the work of the physician-naturalists stopped. General Sherman and his army destroyed the collection, papers, and much of the property of the Elliott Society of Natural History and 16 members of the Society lost their lives in the War.[63] The collections of this period did not fare well:

> A volume of the priceless Elliott Herbarium was discovered only a few months ago in a lot of rubbish in the cellar of the Library Building. The greater portion of the magnificent conchology collection, which, as quoted above, the Trustees forty years ago felt justified in declaring was the "amplest and richest in the western world" was thrown aside in the utmost disorder.[64]
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> During the later part of the War of Secession, the minerals, fossils, shells and other small specimens were removed into the interior of the State, as were also the originals of the figures illustrating the work of the "Quadrupeds of North America," by Audubon and Bachman, which had been presented to the Museum by those gentlemen. The records, books, papers and three or four boxes of valuable specimens in natural history were destroyed by fire, the act of incendiary Negroes.[65] [Other historians blamed Sherman's troops.]

Agassiz, pp. 124, 132, 257-59, 261; D. Malone in *Dict. Amer. Biog.*, vol. pp. 265-66. For Morton see "Samuel George Morton (1799-1851," *Nature Magazine*, May 12, 1951, pp. 754-55; Stanton, *Leopard's Spots*, p. 123. In the years before the Civil War the three great centers of scientific interest in the United States were Boston-New Haven, Philadelphia, and Charleston. Charleston was proud of its Medical School, the Elliott Society of Natural History, and its Museum, which Agassiz thought the finest in the United States, except for the Museum of the Academy of Natural Sciences in Philadelphia. The Charleston scientific community consisted of men of national reputation. There was the mycologist Henry W. Ravenel and his brother Edmund, conchologist and professor of anatomy at the Medical College, Lewis R. Gibbes, primarily a conchologist but contributor to botany and chemistry as well; Francis S. Holmes, professor of natural history at the College of Charleston and curator of the Museum; John Edwards Holbrook, America's outstanding herpetologist; Frederick Peyre Porcher, botanist and professor at the medical college; the physicians William Middleton Michel, James Moultrie, Samuel Henry Dickson, and John Bachman, naturalist. All kept in close contact with scientific developments in the North, and many through correspondence with Morton The Bachman and Morton controversy over "Unity of man" is discussed on pp. 123-136 in Stanton's *Leopard's Spots*. See also J H. Easterby, *A History of the College of Charleston*, Founded 1770 (Charleston, S.C., 1935), p. 110; *Letter to the Rev. John Bachman, D. D on the question of Hybridity in Animals, considered in Reference to the Unity of the Human Species*, by Samuel George Morton (Charleston, S.C , 1850); Samuel D. Gross, *Lives of Eminent American Physicians and Surgeons of the Nineteenth Century* (Philadelphia, 1861), *s.v.* Morton, pp. 582, 604; John D. Davies, *Phrenology: Fad & Science* (New Haven: Yale Univ. Press, 1955), pp. 145, 146, 148; Fries, *Double Elephant Folio*, pp. 105, 110, 226-27. Charles D. Meigs, *A Memoir of Samuel George Morton, M.D., Late President of the Academy of Natural Science of Philadelphia* (Philadelphia, 1851). Whitfield J. Bell, Jr., in *Dict. Sci. Biog.*, vol. 9, pp. 540-41.

[63] *Proc. Elliott Soc. Nat. Hist.*, vol. 3, p. 59; Meisel, *Bibliography of American Natural History*, vol. 3, p. 165.

[64] *Bull. Charleston Museum*, 1907, *3* (8), 74.

[65] George Hall Ashley, *General Guide to the Museum of the College of Charleston*, semi-centennial ed., 1851-1901 (Charleston, S.C., 1901), pp. 7-8.

After the War, H. W. Ravenel, "the South's finest botanist . . . derived a variable income by collecting and classifying botanical specimens for various scientists and societies."[66] Francis Peyre Porcher, M.D., who had published *The Resources of the Southern Fields and Forests* in 1863 as a confederate medical botany text, reprinted it in 1869 to help the needy population.[67]

The period from 1722 to 1860, from Catesby's physician-patronized Carolina trip to the 1860 edition of Holbrook's *Ichthyology of South Carolina,* was one of intense activity in natural history in Charleston. Most of the work was done by physician-naturalists, whose endeavors reveal clearly the various phases that occurred in the natural history movement as a whole and demonstrated the close ties between medicine and natural history throughout the period.

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[66] Gee, "South Carolina botanists," pp 38-41; *Dict. Amer. Biog.*, vol 15, p. 396.

[67] Gee, *op. cit.*, pp. 46-47; Waring, *History of Medicine in South Carolina*, vol. 2, pp. 282-285

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

DOUGLAS JAMES GUTHRIE

M.D., D.Litt., F.R.C.S.Edin., F.R.C.P. Edin., F.R.S.Edin.

The death took place at Edinburgh on 8 June, 1975, in his 90th year of Dr. Douglas James Guthrie, a medical historian of international repute. Born in the little town of Dysart in Fife, Scotland, on 8 September, 1885, the son of the Rev. William Guthrie, he was educated locally, then at the Royal High School, Edinburgh, and subsequently at the university where he graduated with honours in 1907. Following postgraduate study he entered general practice but on the outbreak of World War I he served first in the Royal Army Medical Corps before being transferred to the Royal Air Force Medical Service. From demobilisation in 1919 until he retired from active medical practice in 1945, he pursued the specialty of otorhinolaryngology in Edinburgh, becoming consultant aural surgeon to the Royal Hospital for Sick Children there. Here he became interested in disorders of speech in children and published, with George Seth, an important book, *Speech in Childhood* (1935), as well as pioneering the teaching of speech therapy.

At the age of sixty Guthrie entered on a new career, that of medical historian, and soon became internationally known through his admirable *History of Medicine* (1945) on which he had been quietly engaged in writing for the previous ten years. This book was subsequently translated into several languages. A lifelong friend of John D. Comrie, first lecturer on medical history at Edinburgh University medical school, Guthrie was much influenced by him and constantly acknowledged his debt to Comrie. He travelled widely, studying the development of the medical art and meticulously recording his findings which he subsequently translated into innumerable papers, both factual and philosophical. A volume of selected papers, *Janus in the Doorway,* (1963) probably sheds the best light on Guthrie's wide-ranging view of medical history. An invitation to deliver the fifth series of Logan Clendening Lectures at the University of Kansas was one which he deeply appreciated and took as his subject *From Witchcraft to Antisepsis: A study in Antithesis,* subsequently published in 1955. Other books from his pen may be mentioned such as *Lord Lister: His Life and Doctrine* (1949); *The Royal Edinburgh Hospital for Sick Children, 1860-1960* (1960); and *Extramural Medical Education in Edinburgh* (1965). A man of many interests and deep learning he was honoured by numerous societies and organizations but the two he probably valued most were the honorary D. Litt. conferred by his Alma Mater and the Honorary Fellowship of the Royal Society of Medicine, both conferred in 1967. In 1948 with a few interested colleagues he founded the Scottish Society of the History of Medicine, becoming its first president and later honorary president, and was a co-founder of the British Society for the History of Medicine, serving as its president for a period. In

BULLETIN OF THE HISTORY OF MEDICINE 49 575-584 (1975)

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1965 he established a lectureship in medical history at the Royal Colleges of Physicians and of Surgeons of Edinburgh. He is survived by his second wife whom he married in 1953.

Douglas Guthrie's tall, erect figure was a familiar one at medical history gatherings both at home and abroad and it is difficult to realise that we shall no longer meet him at such events. His enthusiasm for the history of medicine was boundless and many owe him a deep debt of gratitude for his encouragement and guidance in the pursuit of this fascinating study. The pilgrimages to places of medical interest in Edinburgh which he organized essentially for postgraduates were delightful and rewarding experiences for those attending for he spoke of his medical heroes and the places where they had worked as if he had known them all intimately. We remember Douglas Guthrie with affection.

H. P. Tait, M.D., D.P.H.
Principal Medical Officer
City of Edinburgh
Senior Lecturer, Preventive Paediatrics
University of Edinburgh

THE ROCKEFELLER ARCHIVE CENTER

The Rockefeller Archive Center, including among its extensive holdings many items relating to the development of medical research in this country, is now open to scholars. The Center is located in Pocantico Hills, New York, about 25 miles north of New York City.

The Center will be the archival depositary for the records of The Rockefeller University, The Rockefeller Foundation, The Rockefeller Brothers' Fund, and members of the Rockefeller Family, as well as other organizatons and individuals who have shared in the Rockefeller philanthropies and enterprises.

The Rockefeller Archive Center is governed by the Board of Trustees of The Rockefeller University through a Governing Council. The members of the Center's Council are: J. George Harrar, Frederick Seitz, John Knowles, Dana S. Creel, John D. Rockefeller 3rd, Frank Stanton, William McGill, Richard Couper, William Dix, William O. Baker, and Nathan Reingold. The Center is under the direction of Dr. Joseph W. Ernst. Dr. J. William Hess, Archivist of The Rockefeller Foundation, is the Associate Director.

The Archive Center, known as Hillcrest, was designed by Mott Schmidt. It has been converted into offices for the staff, research rooms, and auxiliary service areas. An addition, built into the hillside, will hold the documents in the archives.

The records storage rooms are on two levels which step down the existing slope. The volume of storage space is concealed by the contours of the site, while the roofs serve as a terrace for the house and a screened parking area. Though in a contemporary idiom, the addition is esthetically tied to the house by the use of similar material.

Goldstone and Hinz were the architects for the archives addition. It is equipped with temperature and humidity controls to maintain ideal conditions for the records. An automatic heat and smoke detection system has been installed. In the event of fire, the affected storage room will be flooded with Halon gas.

Among the first records placed in the Center were the archives of The Rockefeller Foundation. These records, beginning in 1913, exceed 4,000 cubic feet in volume and are open for research for the years prior to 1942. Of special interest are files and reports relating to the effort to improve the medical sciences and medical education in the U. S. and throughout the world between the two world wars. The Foundation's contributions included gifts to institutions in England, France, Belgium, Brazil, China, Canada, Lebanon, Thailand, and the South Pacific. Within the U. S., the Foundation made significant grants for medical research to Johns Hopkins, Oregon, Rochester, Stanford, Utah, Vanderbilt, and Yale universities. Direct support of research included such subjects as infectious diseases, drug addiction, endocrinology, otology, neurology, the history of medicine, legal medicine, dermatology, tropical medicine, physiology, psychiatry, industrial medicine, medical economics, psychology, and human heredity.

Much of the Foundation's earliest activity was in the field of public health. World-wide campaigns against hookworm, yellow fever, and malaria are documented at the Center. There are also extensive files relating to programs in biology, the social sciences, arts and humanities, and agriculture. Papers of some individuals directly involved in the Foundation's work have been given to the archives and are also available for research.

Several other Rockefeller organizations, no longer active, have given their archives to The Rockefeller Foundation. These collections are also at the Center. Among them are the General Education Board records. The Board conducted a program in medical education which was co-ordinated with the Foundation's efforts. U. S. medical schools aided by the Board included Columbia, Cornell, Harvard, Johns Hopkins, Meharry, Iowa State, Tulane, Chicago, Colorado, Rochester, Virginia, Vanderbilt, Washington, Western Reserve, and Yale. In its other work which began in 1903, the Board made grants for the improvement of all levels of education in all parts of the U. S. It was especially active in the South and in the development of public schools for blacks. Its records are open for research through 1954.

Other collections include the Laura Spelman Rockefeller Memorial, 1918-1929, which was active in the social sciences, race relations, child study, parent education, leisure, public health, religion, and social welfare; the Bureau of Social Hygiene, 1911-1940, which promoted campaigns against prostitution, vice, and narcotics and developed programs in criminology, juvenile delinquency, population, public administration, sex education, and venereal disease; the International Education Board, 1923-1929, which supported work in the natural sciences and agriculture as well as humanities and social sciences; the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease, 1909-1915; and the Spelman Fund of New York, 1928-1949, which was primarily active in public administration and intergovernmental relations. A short description of these collections is available on request.

In the Rockefeller University's Archives are documented the activities of the University and its predecessor, the Rockefeller Institute for Medical Research.

Established in 1970, the University Archives reflect the organization of medical science in the first half of the 20th century, touching also upon related social issues such as the anti-vivisection movement and controls of milk supplies. They document much of the fundamental research basic to scientific and medical progress and important new laboratory techniques. Included in the collection are photographs of the growth of the institution and neighbourhood changes, and of individual scientists, their laboratories and equipment, and their research results.

Inventories of those University records which have been processed and are ready for use are available at the University and at the Center.

Descendants of John D. Rockefeller are placing some record groups from the Rockefeller Family Archives in Hillcrest. Currently under consideration for transfer are some of the files of John D. Rockefeller, John D. Rockefeller, Jr., Martha Baird Rockefeller, The Davison Fund, The American International Association for Economic and Social Development and the archives of several small Rockefeller philanthropies. Information regarding the contents and availability to scholars of the record groups from the Rockefeller family is available upon request.

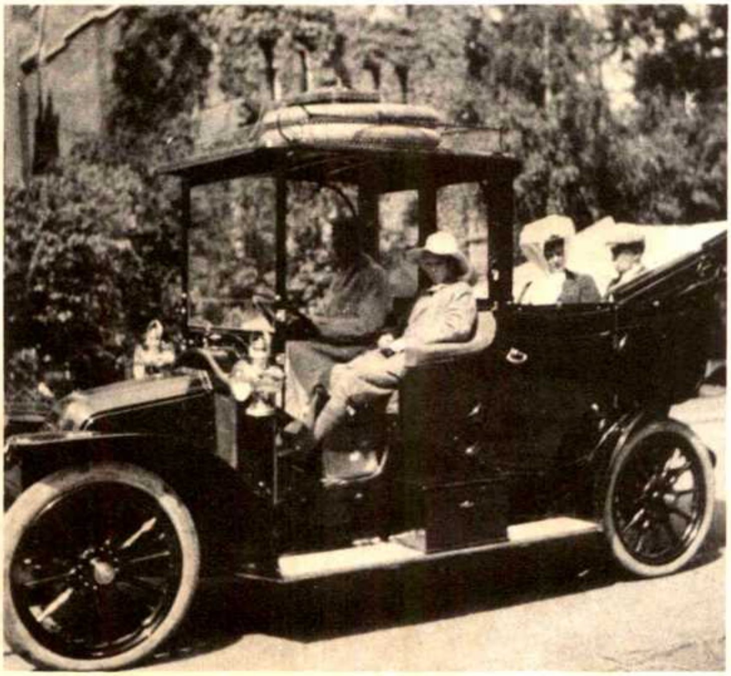
On December 5 the Center held a small conference on "The Scholars' Right to Know vs. the Individuals' Right to Privacy." In prepared comments, Daniel J. Reed, of the National Archives, and Robert Rosenthal, of the University of Chicago, approached the topic from their point of view as records keepers; Norman Graebner, of the University of Virginia, spoke as a user of Archives; and John E. Lockwood, retired Chairman of the Trustees of the New York Public Library, considered the topic from the vantage point of a donor.

JOSEPH W. ERNST
Director

ROKITANSKY "ON SEPTAL DEFECTS"

This year marks the centennial of the publication of one of the outstanding works on the development of malformations of the heart. Carl Rokitansky's monograph on septal defects, *Die Defecte der Scheidewände des Herzens*, published in 1875 in Vienna, revealed the great Viennese pathologist's mastery of his subject. Fourteen years in preparation, the work was divided between case descriptions which came from his own vast experience at autopsy, and a presentation on the general subject of atrial and ventricular septal defects. Overshadowed and momentarily maligned by his contemporary, Rudolph Virchow, Rokitansky rose from the ashes of his humoral theory to revise his textbook and contribute many valuable articles. This final publication, considered by many his most valuable work, appeared three years before his death.

ROBERT J. MICIOTTO
Johns Hopkins Institute of the History of Medicine



THE OSLERS OUT FOR A DRIVE

The photograph reproduced here comes from the archives of the Osler Library at McGill University. It bears no date and there are no explanatory comments with it in the files. So vast is the Oslerian literature that it would be unwise for anyone to claim with complete certainty that a particular picture of William Osler had not been published somewhere. However a reasonably thorough search has failed to reveal prior publication of this gem. The photograph shows Revere Osler in the front seat of the car with the chauffeur on his right, as is proper for a motor driven in Britain. In the back seat are Revere's parents. The Harvey Cushing papers in the McGill University Archives contain a copy of a letter from Grace Osler to Mrs. Cushing dated May 29, 1908, stating that the Oslers had ordered a Renault car and that "Dr. Osler is very fond of motoring and does not mind going fast." Also Cushing's biography of Osler has references to motor trips in the summer of that year. Mr. Michael Sedgwick of Sussex, England, automobile historian and writer, has identified the car in the photograph as a Renault, probably of the 1906-09 period. These pieces of information, and Revere's appearance, suggest that the photograph was taken in 1908 or thereabouts.

E. H. Bensley, M.D.
Department of the History of Medicine
McGill University

ANNOUNCEMENTS

NATIONAL NEWS

American Osler Society

The Society held its fifth annual meeting on April 30, 1975, at the National Library of Medicine in Washington. The next meeting will be held on April 2, 1976, at the Johns Hopkins School of Medicine in Baltimore. The officers for 1975-76 include A. McGehee Harvey (president), Raymond D. Pruitt and Martin M. Cummings (vice-presidents), Charles D. Roland (secretary-treasurer).

Aviation Medicine Directory

An extensive directory of medical artifacts relating to aviation is now being compiled by the Aerospace Medical Association with the help of a National Library of Medicine Grant. A search for significant artifacts, and such memorabilia as notebooks, diaries and photographs in private collections as well as museums, will be conducted during the next two years by Dr. Robert J. Benford, chairman of the Association's History and Archives Committee. The directory also will include descriptions of objects in collections in foreign countries.

Boston

The Museum of Science has on view a special bicentennial exhibit, "Medicine and Health Care." It contains much historical material, including historical sculptures by Doris Appell, and a section, "Medical Milestones," highlighting important Boston contributions.

Carlisle, Pa.

Dickinson College has acquired a lancet which once belonged to Benjamin Rush, Colonial physician and signer of the Declaration of Independence and the moving force behind the founding of the College. The instrument, small enough to fit into the palm of the hand, consists of a surgical blade attached to a tiny but powerful spring mechanism which, when released, drives the blade into the patient's vein. This relic from the time when bloodletting was prominent in the treatment of most ills was the gift of Dr. Ronald Goldberg of Cherry Hill, N. J., a 1954 alumnus.

Connecticut

The Third Trans-Disciplinary Symposium on Philosophy and Medicine took place December 11, 12 and 13 at the University Health Center, Farmington, under the auspices of Humanistic Studies in Medicine, The School of Medicine, University of Connecticut. The Symposium was held in association with the Society for Health and Human Values.

Harvard University

The centenary of the foundation of the Boston Medical Library in the Francis A.

Countway Library of Medicine was celebrated October 21-25, 1975, with a series of exhibits, culminating in a gala reception at the Library at which portraits of medical and scientific luminaries by the renowned photographer, Jousuf Karsh, were exhibited. Twelve of Mr. Karsh's portraits, with descriptive texts, have been brought out as Portfolio Number One of "Healers of Our Age," a limited edition of 590 copies, printed in Switzerland and produced for the benefit of the Oliver Wendell Holmes Endowment, with the support of the Polaroid Corporation. The Portfolio can be acquired by a donation of $500 to the Library, proceeds to be used to preserve and enhance the Library's historical collections.

History of Dermatology Club

The third annual meeting of the Club will take place on December 6, 1975, in San Francisco. The annual lecture will be delivered by Dr. Donald M. Pillsbury, Emeritus Professor of Dermatology at the University of Pennsylvania.

Logan Clendening Traveling Fellowship in the History of Medicine

Applications are invited for the Fellowship which memorialized the late Dr. Logan Clendening. It is tenable for three months during 1976 and provides $1,000 for travel anywhere in the world to study any aspect of medical history. The Fellowship is open to registered students (or college seniors accepted for medical school) of any recognized medical or osteopathic school in the United States or Canada. Special application forms for detailing proposed projects, which must be returned not later than March 15, 1976, can be obtained from Robert P. Hudson, M.D., Chairman, Department of the History of Medicine, University of Kansas Medical Center, Kansas City, Kansas 66103.

National Library of Medicine

The NLM, in cooperation with the Josiah Macy, Jr. Foundation, is sponsoring a Colloquium in Celebration of the Bicentennial of U. S. Medicine, May 6 and 7, 1976, in Bethesda, Md. Topics will include medical education, public health, medical care, select specialty areas and U. S. medicine as seen from abroad. Coordinator for the Bicentennial Colloquium is Miss Mary E. Corning, National Library of Medicine, Bethesda, Md. 20014.

New Journal

The Journal of Medicine and Philosophy, an interdisciplinary quarterly journal sponsored by the Society of Health and Human Values, will be published by the University of Chicago Press beginning in March 1976, with Edmund D. Pellegrino as editor; H. Tristram Engelhardt, associate editor, and Ronald W. McNeur, managing editor. Of central issue to *The Journal* is the understanding of medicine and philosophy as contributing to a theory of human reality and a development of a philosophy *of* and *in* medicine. For additional information write to *The Journal of Medicine and Philosophy,* University of Chicago Press, 11030 Langley Ave., Chicago, Ill. 60628.

University of California

The History Collection of the Library of the San Francisco campus has received from the Regional Oral History Office the transcripts and tapes of the Dental Oral

History Project begun in 1967. Interviews with fourteen dentists instrumental in shaping the growth of the dental profession in the area are included. Copies of the transcripts are available at cost.

University of Kansas Medical Center

Dr. Owsei Temkin, William H. Welch Professor of the History of Medicine Emeritus at the Johns Hopkins University, presented the History and Philosophy of Medicine Guest Lectures, September 25-27, 1975, speaking on Hippocrates and on diseases of the famous.

University of Minnesota

On December 1, 1975, a History of Medicine Special Lecture was given by Dr. Jerome J. Bylebyl, Assistant Professor of the History of Medicine, University of Chicago. Dr. Bylebyl, who is a Macy Fellow at the Johns Hopkins Institute of the History of Medicine, 1975-76, spoke on "New Light on William Harvey."

University of Pennsylvania

The Department of History has announced that the Richard H. Shryock Lectures in Medicine and Society were inaugurated, December 1-3, 1975, with three lectures by Dr. George Rosen, Professor of the History of Medicine and Professor of Epidemiology and Public Health, Yale University. The topics of his lectures were: "Competition in the Medical Market, 1875-1910," "Stabilizing the Market, 1910-1940," and "Disruption of an Unstable Equilibrium, 1940-1975."

Appointments

Inci A. Bowman, Ph. D., has been appointed associate curator for the History of Medicine Collection of the Moody Medical Library at the University of Texas Medical Branch, Galveston. Dr. Bowman will be responsible for the public services of the Library's history of medicine department, including the preparation of book exhibits and special articles, and the development of the collection which contains some 30,000 volumes.

Ernst W. Stieb, Ph. D., who has been appointed assistant dean of the Faculty of Pharmacy of the University of Toronto, while continuing as professor of the history of pharmacy and in his cross-appointment in the Institute for the History and Philosophy of Science and Technology, is president-elect of the American Institute of the History of Pharmacy, the only non-American ever so honored.

Awards

Dr. Ilza Veith, Professor and Vice-Chairman, Department of History of Health Sciences and Professor of Psychiatry at the University of California, San Francisco, was awarded the Doctor of Medical Sciences degree (Igaku Hakase) by the Juntendo University in Tokyo, Japan, on October 15, 1975. Though an earned degree the award also honors Dr. Veith for her "important contributions in the studies of Oriental medicine."

At the annual meeting of the American Chemical Society Dr. Johannes Willem van Spronsen of the Netherlands was selected to receive the 20th annual Dexter Award for his "outstanding contributions to the history of chemistry."

The Order of the Legion of Honor of France, at the rank of Chevalier, has been conferred on John Z. Bowers, M.D., President of the Josiah Macy, Jr. Foundation and of Alpha Omega Alpha. The award recognizes his contributions to international medical education, particularly in France, and his broad studies in the history of medicine, notably that of Japan and China.

PROGRAMS OF MEETINGS

College of Physicians of Philadelphia

September 24, 1975: "John Morgan and the Origin of a Modern Concept of Medical Specialization," Toby Gelfand, Discussion by Whitfield J. Bell, Jr.; "The First European Hospital in the Western Hemisphere," Gaston Marion-Landais, Discussion by Samuel X Radbill.

Handerson Medical History Society, Cleveland, Ohio

November 5, 1975: "A Physician in 1776," Genevieve Miller.

Mayo Foundation History of Medicine Society, Rochester, Minn.

October 8, 1975: "Max Brodel, Father of Modern Medical Illustration", William B. Westwood; "Career Profiles—Mayo's Medical Artists of the Past." Robert C. Benassi.

Society of Medical History of Chicago

October 22, 1975: Annual Morris Parker Lecture, "Plagues and Peoples: A History," William H. McNeill.

November 12, 1975: "Some Medical Aspects of Greek and Roman Coins," William K. Beatty; "Physicians as Explorers," Frederick C. Kittle.

University of Virginia Medical History Society, Charlottesville, Va.

November 11, 1975: "Rehearsal for Secession: The Departure of Southern Medical Students from Philadelphia in 1859," James O. Breeden.

Washington Society for the History of Medicine, Washington, D.C.

September 25, 1975: "Disease in a Rural Society: The Agricultural Dimension of 18th-Century French Medicine," Caroline Hannaway; "William Harvey and the Classical Tradition." Jerome J. Bylebyl.

November 20, 1975: "The Origin of Benjamin Rush's Theory That Bloodletting Cures Fever," Will Lassek; "The End of the Wet-nursing Business in France, 1874-1914," George Sussman.

William Snow Miller Medical History Seminar, Madison, Wis.

September 10, 1975: "Hugh Cabot (1872-1945): A Medical Reformer," Patricia S. Ward.

September 18, 1975: "Nineteenth-Century Public Health in Europe," John Eyler.

October 9, 1975: "Private to Public Responsibility: The Ethics of Health Care in the Nineteenth Century," Chester R. Burns.

NEWS FROM ABROAD

Germany

A multidisciplinary conference, "Krankheit, Heilkunst, Heilung," was held in Freiburg, September 21-26, 1975. Sponsored by the Thyssen Foundation, the conference was part of a project in historical anthropology focussing on medicine which was initiated in 1974 by the editorial board of the journal for universal history, *Saeculum*. Paul U. Unschuld, now assistant professor at Johns Hopkins University, outlined the project's theme: to document over time and cross-culturally the relationships between socio-cultural context and medical systems. Papers were presented within this framework by A. L. Basham (Canberra) on ancient India; C. Burgel (Bern) on Islamic culture; R. D. Biggs (Chicago) on Babylonia; H. Hoffman (Bloomington) on Tibet; U. Lind (Bonn) on South American Indians; D. V. McQueen (Baltimore) on North America; K. J. Narr (Muenster) on prehistory; H. Schipperges (Heidelberg) on medieval Europe; P. U. Unschuld (Baltimore) on China; and W. Westendorf (Goettingen) on ancient Egypt. Publication of the project's outcome is scheduled for 1977.

Netherlands

The Genootschap voor Geschiedenis der Geneeskunde, Wiskunde, Natuurwetenschapen en Techniek held its annual meeting in Utrecht, October 25-26, 1975. On December 13, 1975, the Vierde Medisch-Historische Dag is being held in Amsterdam, in the Medisch-Encyclopaedisch Instituut van de Vrije Universitet, with Dr. G. A. Lindeboom as chairman.

Scotland

The XVth International Congress of the History of Science will be held in Edinburgh, August 10-19, 1977. A first circular will be distributed in March 1976 or will be available on request from the secretary, Dr. Eric G. Forbes, History Department, University of Edinburgh, 50 George Square, Edinburgh, EH3 9JY. The reply slip added to the circular must be returned if further communications are desired.

BOOK REVIEWS

E. S. Gurdjian. *Head Injury from Antiquity to the Present with Special Reference to Penetrating Head Wounds.* Springfield, Ill.: Charles C Thomas, 1973 (The Beaumont Lecture). vii + 139 pp. Ill. $11.75.

This book is the Beaumont lecture given by Dr. Gurdjian to the Wayne County Medical Society. In it the author describes the history of penetrating wounds of the head from neolithic time until the atomic age. The profusely illustrated text gives particular emphasis to the more recent developments in the prophylaxis and treatment of head wounds.

Dr. Gurdjian emphasizes how relatively little the principles of cranial surgery have changed with time. The skull fracture has been the center of attention throughout the centuries. In fact, only in very recent years has injury to the brain been considered more important than that to the skull. Because the fracture was thought so important, a great deal of attention was devoted to the classification of this injury and the methods of treating each type. Celsus, probably the earliest science writer of whom we have definite knowledge, in a treatise on head wounds gives a detailed description of skull fractures and the methods of establishing the differential diagnosis of such breaks in the cranium. This was considered extremely important, for the outlook varied depending upon the type of break in the skull. Dr. Gurdjian describes the modern scientific techniques which have been used to measure the forces required to produce these fractures. Attention is also gvien to the intracranial stresses which bruise and lacerate the brain when the head is struck.

Dr. Gurdjian also describes the development of wound healing from the days of laudable pus. It was not until the concept of microbes was accepted, that techniques of antiseptic and aseptic surgery could be introduced in an attempt to eliminate this purulent stage of the healing process. Although centuries ago some surgeons happened upon a dry wound healing technique, their practices, not being compatible with the theories and beliefs of their time, were ignored and ridiculed. Had the surgeons of the 11th and 12th century been able to demonstrate that their results were due to the prevention of inflammation, and that the laudable pus which flowed in the wounds of other surgeons was the result of contamination from microbes, they would have advanced medical knowledge more than 500 years. But the traditional concepts of wound healing were so firmly engrained that for more than 50 years all head injured patients were treated in the Hôtel Dieu, one of the largest Parisian hospitals of the 17th century, by the conventional surgical therapy, namely trephination, and all succumbed. In fact, this high mortality led to a bitter controversy between military surgeons as to whether the trephine should be used at all in such cases. Sir Astley

Bulletin Of The History Of Medicine 49 585-595 (1975)
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Cooper epitomized this feeling when he told his students that "If you would advise trephining, you should have a hole made in your head". But nevertheless, as Dr. Gurdjian has emphasized, multiple trephinations were made in most parts of the cranium with some effort to spare the longitudinal sinus which surgeons had learned from bitter experience was a source of disagreeable and uncontrollable bleeding. The role of the dura mater was recognized as a barrier between the brain and the contaminated environment.

The second half of the book describes the improvement of the treatment of brain wounds in the present century. Careful debridement and precise watertight closure of the dura mater brought the mortality from above 50% to approximately 10%.

This is a delightful account of the surgical developments in cranial wounds. The emphasis is upon the practical aspects so that it should appeal to clinicians. However, historians seeking the scientific developments of penetrating head wounds will find this an authoritative treatise.

Reviewed by A. EARL WALKER, M.D., Professor Emeritus of Neurological Surgery, The Johns Hopkins University School of Medicine, Baltimore, Md.

PAUL F. CRANEFIELD. *The Way in and the Way out: Françoise Magendie, Charles Bell and the Roots of the Spinal Nerves.* With a Facsimile of Charles Bell's Annotated Copy of His Idea of a New Anatomy of the Brain. Mount Kisco, N.Y.: Futura Publishing Co., 1974. 1 vol. (v.p.) $25.00.

This book is a meticulous compilation and description of the literature relating to the famous controversy on the assignation of credit for the discovery that the ventral roots are motor and the dorsal roots sensory. It is the thesis of Dr. Cranefield, as of others before him, that this discovery rightly belongs to Francois Magendie, and that Bell, although he published earlier, did not have a clear understanding of the differences between the roots until Magendie's experiments were published. Certainly a reading of the original articles collected by Dr. Cranefield would bear out this thesis. These articles show that Bell was the first to divide the roots, for which he properly receives credit, and he did have the idea that there were two types of nerve roots, but he regarded the ventral roots as both sensory and motor and the dorsal roots as visceral. Furthermore, Cranefield supplies convincing evidence that Bell in 1824 revised some earlier papers to conform to Magendie's data without acknowledging the 1822 work of Magendie. It is interesting that Dr. Bell became embroiled in a similar controversy with Dr. Mayo, a former pupil, over the function of the Vth and VIIth cranial nerves in the face. Reading the original articles makes it clear that Magendie and Mayo provided clear experimental evidence for their conclusions whereas Bell provided only muddy data and uninteresting speculations on these same subjects.

If it be accepted that Magendie deserves credit for the discoveries that led to the "Law of Bell and Magendie" or perhaps more accurately, the "Law of Magendie," it might now be asked whether it is useful to document in such detail this old controversy. There is no simple answer to this question, but one disadvantage of the historical method of study is that one must read large amounts of drivel. This is, I suppose, inevitable because most scientific writings are largely drivel and the only way to escape from reading such material is not to read at all. Certainly the original articles give a flavor of the controversy that cannot be obtained from reviews of textbooks, and it is especially helpful when, as in the present instance, the articles are intelligently selected, located in one place, and clearly reproduced. However, on a more fundamental level, one can ask whether reading the original articles can provide insights into the organization of the nervous system that are not obtained when the conclusions of these studies are learned from review articles or textbooks. In this regard, I must confess that, although I read the articles on the priority controversy with interest, the question of priority is not now an important issue to me. Both Bell and Magendie are dead and a researcher must be primarily concerned with increasing present knowledge. The determination of who is responsible for past advances does not materially aid in this process of advancement. Thus it becomes a matter of priorities and, although it seems apparent that any serious student of the nervous system would benefit from reading as many as possible of the original papers that are influential in the formulation of a principle, this reading must be tempered by a judgement as to the importance of the principle and necessity of getting on to other things.

As regards the importance of the principle we call the "Law of Bell and Magendie," Dr. Cranefield states that "the discovery that the dorsal and ventral roots are the sensory and motor roots is one of the most important in the history of biology." He compares this discovery with that of Harvey's discovery of the circulation of blood because, "just as no rational physiology of the cardiovascular system was possible before Harvey's discovery, so no rational physiology of the nervous system was possible before the discovery of the separate functions of the spinal roots." From the point of view of the impact of the Law on the development of a field of knowledge, these assessments are undoubtedly correct. One has only to read the quote by Charles Sherrington on page 35 of Dr. Cranefield's book to see what an influential finding this was. Thus it seems ironic that this excellent book by Cranefield appears just as evidence is being gathered that will probably require a major revision of the Law of Bell and Magendie.

There have always been some data that are difficult to reconcile with the Law of Bell and Magendie. In 1894, for example, Sherrington noted that a few myelinated fibers degenerated proximal to a cut in the ventral root rather than distally as would be expected for motor fibers. Second, many investigators noted the presence of dorsal root ganglion cells in the ventral root. Third, myelinated fibers attached to peripheral receptive fields have been demonstrated in the ventral root and fourth, there are persistent clinical reports of pain or other sensations during manipulations of the ventral roots. The findings of Sherrington plus the demonstration of peripheral receptive fields for ventral root myelinated fibers make it clear that there are some afferent fibers in the ventral root but the numbers are so few that they are not generally regarded as being clinically significant. The presence of dorsal root ganglion cells in the ventral root is also not a serious threat to the Law because there is no evidence that these cells give rise to afferent ventral root fibers. Finally, the clinical reports are disturbing, but the results are generally ascribed to technical difficulties such as stimulus spread, incomplete dorsal rhizotomy, pulling on the dura or dorsal root, etc. Recently, however, there is evidence that the number of sensory fibers in the ventral root is far more numerous than was previously suspected. The electron microscope reveals that approximately 30% of the fibers in the L7 and S1 ventral roots of the cat are unmyelinated and arise from dorsal root ganglion cells. Physiological studies, based on these morphological findings, have demonstrated unmyelinated fibers in cat ventral roots attached to peripheral receptive fields. If further studies confirm and extend these results, then the conclusion would be that almost one third of the axons in the ventral roots are sensory and a further conclusion would be that the Law of Bell and Magendie is not an accurate description of the organization of the spinal roots.

Thus it can be said that Dr. Cranefield has produced an excellent and comprehensive presentation of the original literature leading to the formulation of the Law of Bell and Magendie and has also provided the papers that indicate the nature of the priority controversy over these findings. Perhaps it is fate that dictated that this book would appear at a time when there is serious question as to the validity of the law. Hopefully, an increased understanding of the organization of the spinal roots will have as profound an effect on the development of insight into nervous system organization as did the original formulation of the law itself.

Reviewed by RICHARD E. COGGESHALL, M.D., Professor of Anatomy, The University of Texas Medical Branch at Galveston, Galveston, Texas.

DOROTHY LONG (Editor). *Medicine in North Carolina, Essays in the History of Medical Science and Medical Service.* Raleigh, North Carolina: The North Carolina Medical Society, 1972. Vol 1, xiii + 349 pp., vol. 2, x + 466 (pp. 350-817). Ill. $25.00.

Wading through this two-volume history of medicine in North Carolina has re-emphasized to me how much civilization is an urban phenomenon. Having spent many years in the South where North Carolina and its great State University have long epitomized the best in Southern Progressivism, I am strongly reminded that this development is of recent origin. North Carolina, lacking any city of consequence, had no state medical society until 1849, no significant medical journal until 1878, no permanent four-year medical school until 1930, and no hospital worthy of the name prior to 1900. It also had no effective health boards in the 19th century, and, although a state board of health was created in 1877, its annual budget as late as 1908 amounted to only $4,000.

As the title indicates, these two volumes are comprised of a series of topical essays, and this topical organization creates a major problem. Although the editor, Dorothy Long, has done a good job, the multiplicity of authors and topics makes a certain amount of duplication inevitable. Volume one begins with the longest of the essays, some 160 pages on the development of medical science in North Carolina by Dr. Wiley

D. Forbus. Dr. Forbus tells us that the date 1850 represents the end of empiric medicine in America and the beginning of scientific medicine. Bearing this in mind, he has drawn most of his material for the period prior to 1800 from secondary sources. Since only a few of these studies relate to North Carolina, he has devoted a good part of his first fifty pages to a survey of American and European medical developments. Starting with the second half of the 19th century, Dr. Forbus concentrates his attention largely on pathology, and his account of 20th-century pathological developments, in which he played a large role, is the best section of his essay.

The second part of volume one consists of sections on the State Board of Medical Examiners, Blue Cross and Blue Shield, and the Women's Auxiliary of the State Medical Society. These essays were all written by participants and are essentially chronological accounts—the best one deals with Blue Cross and Blue Shield. Part three, entitled "Medical Service Facilities" includes chapters on "Pioneer Hospitals in North Carolina," "The North Carolina Cancer Institute," "Tuberculosis in North Carolina," and "The History of the North Carolina Medical Care Commission." It is enough to say that the Cancer Institute was chartered in 1952 and the Medical Care Commission created in 1944. Dr. Wells, one of the better essayists (although like Dr. Forbus he cannot resist giving us several pages on hospital history from ancient times), has managed to dig up information on about a dozen of the hospitals prior to 1900.

Volume two is divided into two sections. The first is made up of six essays on various medical schools, and the second, under the heading of medical specialties, contains articles on surgery, midwifery, obstetrics, pediatrics, ophthalmology, urology, dermatology, orthopedics, radiology, and mental health. In addition, other chapters deal with the general practitioner, public health, and "Doctors in Politics." The histories of medical education at Wake Forest, North Carolina, and Duke are written by former deans, and their affection for their old schools permeates their histories. Dr. Wilburt C. Davison's brief account of Duke University makes an interesting addition to the recently published history of Duke Medical School by James F. Gifford, Jr.

The histories of specialties were written by practitioners, and they consist largely of personal recollections. The author of one of them, after stating that his field has a rich heritage in North Carolina, starts his account with a specialist who began practice in 1919. Another essayist quotes an authority to the effect that there were no orthopedic surgeons in North Carolina prior to World War I—and presumably no orthopedics. Two short essays, one on the midwife and another on obstetrics, tend to overlap. Both devote considerable space to maternal mortality, which is probably just as well since the chapter on public health scarcely mentions the Sheppard-Towner Act and the EMIC.

Aside from the question as to the feasibility of thirty authors writing a unified history, the quality of the essays is very uneven. Few of the authors have any sense of history, and most concern themselves with institutions and organizations. The history of public health begins with the establishment of the State Board of Health, and the histories of specialties usually start with the appointment of a section or committee in the State Medical Society. On the credit side, the authors are among the outstanding physicians in North Carolina, and the personal recollections of these individuals have a considerable value. The fact still remains, however, that someone needs to study the sources for the 18th and 19th centuries and write a comprehensive medical history of North Carolina.

Reviewed by JOHN DUFFY, Ph.D., Priscilla Alden Burke Professor of History, University of Maryland, College Park, Md.

ALFRED W. CROSBY, JR. *The Columbian Exchange.* Biological and Cultural Consequences of 1492. Westport, Conn.: Greenwood Publishing Co., 1972 (Contributions in American Studies, No. 2). xv + 268 pp. Ill. $9.50.

Once in a great while, an historian emerges who possesses the precious ability to synthesize information that many plodding researchers have compiled and emerge with a vitally important set of concepts ordering and labeling data. If Crosby, a research associate at the University of California San Francisco Medical Center's Department of History of Health Sciences, has not crossed the line into that select company with this volume, he demonstrates that he has the stuff of which such scholars are made. Other historians, like Benjamin Keen, have produced massive tomes on the intellectual dimensions of post-Columbian times that are competent, professional, yet not so inspired. Crosby sharply focuses this relatively brief and eminently readable synthesis upon the basic biological consequences of the Columbian discovery.

Crosby begins by emphasizing the biological differences between the human populations, floras and faunas of the New and Old Worlds that arose through evolutionary differentiation in geographic isolation prior to 1492. Then he sketches in a chapter expanded from a journal article the initial impact of Old World disease agents upon the human beings inhabiting the New World. Dwelling mostly upon the first great smallpox pandemic (reinforced with other ills), Crosby well orients the reader to the dramatic depopulation that constituted the most drastic single American consequence of the "Columbian exchange."

Turning to the transfer of Old World animals and plants to the New World, Crosby comments that "the impact of the Old World on the New was so great that we of the twentieth century can only imagine what pre-Columbian America must have been like." Columbus himself carted to Española seeds and cuttings of wheat, chickpeas, melons, onions, radishes, salad greens, grape vines, sugar cane and deciduous fruits. Add bananas, oranges and other citrus, rice, indigo and Old World cotton for mercantile plantations, oil olives, not to mention horses, cows, goats, swine, sheep, donkeys, chickens, attack dogs, and one perceives why only imagination can reconstruct the floral and faunal reality of pre-Columbian America. Crosby simplifies his analysis by limiting it largely to wheat, wine and olives as culturally key elements in Spanish cuisine. With Old World livestock and their immediate explosive adaptation to rich New World grasslands came overgrazing, floral modification and erosion—a "wild oscillation of the balance of nature."

The "Columbian Exchange" having been two-directional, Crosby reappraises evidence that native Americans sent syphilis back to Europe as unconscious reprisal for smallpox, measles and other pathogens. Whatever the conclusion about the migration or mutation of *Treponema pallidum*, its cultural and biological consequences were enormous. "The age of the canny lover had arrived."

Crosby devotes a chapter to the thesis that New World food plants cultivated in the Old World there set off and then sustained a population explosion. Potatoes and maize today rank among the five largest food crops world-wide, and Crosby pays most attention to them. He also emphasizes the importance of a wide variety of beans, manioc and sweet potatoes, mentioning also peanuts, squashes and peppers. Criticizing available production statistics, Crosby remarks: "Any world traveler will tell you that the visitor-from-far-away may be treated to gourmet delights for his first few meals in a strange new country, but eventually he will find himself confronted . . . with a plate of beans—American beans."

Finally, Crosby outlines how the "Columbian Exchange" continues with intercontinental movement of Hessian flies, starlings, English sparrows, carp, Japanese beetles, Dutch elm disease, muskrats, gray squirrels, etc. Most important of all, though, has been mass migration of human beings during the past century and a half—over 61,000,000 persons from 1851 to 1960, 45,000,000 settling in the Americas, and 34,000,000 of those in the U.S. Crosby ends pessimistically: "The long-range biological effects of the Columbian exchange are not encouraging" because man has rapidly reduced and specialized the total gene pool of living things.

Some minor errors crept into Crosby's work. Nevertheless his book should find a place in every university, college and secondary school library.

Reviewed by Henry F. Dobyns, Ph.D., Professor of Anthropology, Prescott College, Prescott, Arizona.

Michel Foucault. *The Birth of the Clinic: An Archaeology of Medical Perception.* Translated from the French by A. M. Sheridan Smith. New York: Pantheon Books, 1973. xix + 215 pp. $8.50.

The interval from the French revolution to the 1830s is one of the most fascinating periods in medical history, just as in political, social, and intellectual history. Hence, the English speaking world might justifiably look forward to having available Michel Foucault's book dealing with this era.

My own keen anticipation was rudely shaken when I started to read it. Despite a substantial acquaintance with the primary sources and a long study of the philosophic problems involved, I found myself baffled and frustrated on every page, quite unable to penetrate the thought. I finally realized that much of the trouble must lie with the translation.

The first requisite of a good translator is a mastery of the language *into* which the translation is made. Mr. Sheridan Smith obviously did not have such a mastery. Who. with any feeling for the English language, would permit sentences like this: "Classificatory thought gives itself an essential space, which it proceeds to efface at each moment. Disease exists only in that space, since that space constitutes it as nature; and yet it always appears rather out of phase in relation to that space, because it is manifested in a real patient, beneath the observing eye of a forearmed doctor." Granted that this is out of context, nevertheless the reference of pronouns, especially "it," would dismay a grammarian in any context.

After ploughing through about a third of the book, with increasing frustration, I sent an S.O.S. to M. Bloch of the Librarie Centrale for a copy of the original French. In a few days I had the French edition (original publication 1963, second edition 1972), and with the help of this I could make a little more sense of the English.

To anyone with the original text in hand, it will soon be manifest that Mr. Sheridan Smith was profoundly ignorant of medical terminology. Thus, in a description of pregnancy we find, ". . . the extension of the womb over the pubic bones; the projection of the whole hypogastric region in the fifth month. . . ." If we refer to the French, the appropriate translation is obvious—the uterus extended above the pubic bones; and filled the whole lower abdomen in the fifth month. The French word "saillie" can be translated "projection" in an architectural context, but this is medicine, not architecture.

Another severe failing is the tendency of Mr. Sheridan Smith to transliterate French words into English rather than translate them. Many French words have a close literal resemblance to some English words, but this literal resemblance does not indicate the best English translation.

The translator provided a note dealing with two key words, *regard* and *clinique*. The latter is used in two senses, "clinical medicine" (an abstract term) and "the teaching hospital" (the concrete locus where patients are seen). And yet for these two entirely distinct meanings, he uses the one English word, "clinic." The resulting confusion is immeasurable. And for the French word "regard" he uses the English "gaze," with confusion twice confounded. To be intelligible the single French word must be rendered by various English words depending on the context and the intended shades of meaning.

It would be pointless to spend more time on the ineptitudes, mistranslations, barbarisms, and general clumsiness, not to mention the frequent total incomprehensibility Suffice to say that if a prize were offered for the worst translation of the 20th century, this book would definitely be in the running. The only way to read this English translation is to have the French original at hand at the same time.

What about the contents? I do not propose to write a full review of a French book published originally in 1963, but certain striking features call for comment. First of all, Foucault is a philosopher and poet rather than an historian. He deals with a historical subject but he limits his study almost exclusively to French primary sources of a narrow time span and he totally ignores cognate writings in other languages as well as all the rich secondary sources. Many of his French references are little known and Foucault has done considerable service in noting them. But this does not excuse the markedly restricted scope. He has given us not so much a work of history as an interpretation of certain abstract trends within a particular historical period. However, while the French (unlike the English translation) is always graceful, it is often so metaphorical and abstract that the meaning eludes the reader.

The clearest parts of the book are those that give straightforward narration, describing the interrelations of politics and medicine during the revolutionary period and drawing on excellent primary sources. But the narrative portions are a relatively small part. Most of the book deals with philosophic problems, not with straightforward narration nor exposition. And in philosophy Foucault has a distressing affinity with the Naturphilosophie school of the early 19th century. Expressions literally meaningless can nevertheless have considerable metaphorical and emotional impact, can clothe the author's insight with agreeable imagery. But with metaphor and imagery, can we be sure that what the reader pictures to himself is what the author really meant?

Here we have a major problem wherein philosophy is akin to poetry. The poet may have an insight into reality—Sheridan Smith might call it a "gaze"—but insight is ordinarily communicated through language. And when language is deliberately metaphorical its quicksilver-like property can elude rigorous analysis. Instead the communication becomes evocative rather than expository.

Some of the major problems in the book concern the nature of disease and its identification, and the changing attitudes towards it. What *is* a disease? Is it an *ens* in the scholastic sense? How does a disease relate to the symptoms that describe it? How does a sign relate to the thing signified? What concepts and presuppositions underlay the activity of the 18th century nosologists? How did the time dimension enter into the concept of disease, so that the concept became dynamic rather than static? How did the new attitudes toward pathology and post-mortem examinations affect the change from nosology to dynamism? How did the massive transformation from nosologic thinking to dynamic thinking come about? Foucault does not pose these problems baldly (or even clearly) but these problems seem to lurk behind the obscure chapter headings and within the somewhat clouded text.

Foucault does not show any awareness that these problems have a venerable history and that the writings of Paracelsus and van Helmont, of Sennert and Boerhaave are highly relevant, even though Sauvages, Pinel, Bichat, Bayle, Laennec, and Louis are more explicit than their predecessors. Medicine has *always* had a broad philosophic dimension, capable of lucid and soundly historical exposition.

Foucault writes discursively but not quite clearly. He gives us interpretation without adequate information, metaphor and imagery without cogency. Yet the French text, with all its faults, is stimulating; the English translation is unfortunate.

Reviewed by LESTER S. KING, M.D., American Medical Association, Chicago, Ill.

National Library of Medicine. *Bibliography of the History of Medicine, 1964-1969.* Washington, D.C.: U S. Government Printing Office, 1972. vi + 1475 pp. $12.00

This weighty (7 lb.) reference will be appreciated by all interested in the history of medicine. The convenience of a five-year cumulative bibliography should be obvious to anyone who has laboriously sought out a given topic through several dozen numbers of monthly bibliographies. The National Library of Medicine's *Bibliography* combines within a single volume the contents of four previous annual bibliographies (1965-1968) and citations to material published during 1969. The *Bibliography* has three major parts: "Biographies," "Subjects," and "Authors." The "Subjects" section, nearly one-half of the entire volume, contains numerous subdivisions ranging alphabetically from "Aerospace Medicine" to "Women in Medicine." The largest subdivision, "Diseases and Injuries," occupies 83 pages; it would have been helpful if the individual diseases with their page numbers had been listed in the "Table of Contents." Within the text, diseases are arranged alphabetically and, in many instances, are further subdivided according to historical period and geographical location.

Researchers, librarians, students, and compulsive browsers will be drawn to the *Bibliography.* Perhaps its greatest beneficiaries will be instructors already acquainted with the standard literature and seeking to prepare new or rejuvenate old lectures. I can personally vouch for the *Bibliography* as an aid in preparing lectures on "mental illness in antiquity" and "leprosy." The *Bibliography* also serves as a quantitative index to current research. For example, it reveals that Freud (165 citations) has been receiving much more attention than Claude Bernard (50) or William Harvey (40); as might be expected, plague (125) and syphilis (56) were subjects of keen historical interest, while the plethora of work on neoplasms (172) and the paucity on sex deviations and disorders (33) surprised this reviewer. A clearer distinction between full-length books and articles would, I believe, enhance the value of the *Bibliography.* Its reasonable price should encourage private individuals to purchase their own copies of the *Bibliography.*

Reviewed by TOBY GELFAND. Ph.D., Assistant Professor, Program in History and Philosophy of Science, Princeton University, Princeton, N. J.

DAVID F. MUSTO. *The American Disease: Origins of Narcotic Control.* New Haven: Yale University Press, 1973. xiii + 354 pp. $10.95.

The American Disease is a scholarly and fascinating account of the development of narcotic controls in the United States. After a brief background section on the nineteenth century, Musto proceeds to treat in detail the central role of the United States in promoting international efforts at narcotic controls and the passage of the Harrison Act. Later chapters discuss the search for addiction cures, state and local narcotic controls, the era of narcotic clinics and the federal assault on these clinics and on the concept of maintenance of addicts on drugs, the "troubled twenties," the Marihuana Tax Act of 1937, and the eventual shift towards federal support of a medical approach to the addiction problem. A concluding chapter summarizes the subject and points to some lessons from history which the author feels are worth considering in the present construction of national drug policies.

Professor Musto's book is the most comprehensive, definitive and objective study produced to date on the history of the narcotic problem in America. Since he has interpreted the word "narcotic" broadly to include such drugs as cocaine and marihuana (which have commonly been classified as narcotics in law and custom), the book sheds light on the history of these drugs as well as on that of opium and its derivatives. In addition to an extensive bibliography of printed literature, the author has drawn heavily on important and previously neglected manuscript records such as the files of the Bureau of Narcotics and Dangerous Drugs, the personal papers of former narcotics commissioner Harry J. Anslinger, and the papers of Dr. Hamilton Wright, an instrumental figure in the passage of the Harrison Act.

On the whole, the book is well written, and, considering the broad and complex nature of the subject, reasonably well organized. In my opinion, however, the chapter on "The Search for Cures" interrupts the flow of the discussion of the development of narcotic controls. I recognize that the problem of the treatment of addiction is relevant to the main theme of the book. It might have been less distracting, however, to disperse the material in this chapter throughout the book in appropriate places as background information, rather than to collect it together in one place and wedge it, somewhat arbitrarily, between the chapters on the Harrison Act and on state and local controls.

In the chapter on "Marihuana and the Federal Bureau of Narcotics," Musto offers a new interpretation of FBN Commissioner Anslinger's motives in fighting for the passage of the Marihuana Tax Act of 1937. Previous accounts have tended to view Anslinger as a man on a moral crusade or as a bureaucrat seeking to enhance the budget and the power of his agency. Musto suggests that Anslinger originally opposed the law because he did not see marihuana as a serious problem and because he felt that it would be difficult to enforce the law. Pressure from local police forces in the Southwestern states, where the concern about the drug (used by Mexican immigrants) was greatest, forced him into supporting the drive for federal legislation. While the author clearly demonstrates that this pressure from police in the Southwest was undoubtedly a factor in Anslinger's thinking, one can still, I believe, raise questions as to whether it was the sole factor, or perhaps even the most important one. The vehemence with which Anslinger attacked marihuana in his writings and oral statements is hard to reconcile with this view of a reluctant supporter of antimarihuana legislation, although public pronouncements admittedly often differ markedly from private views. At least some of the evidence used by Musto in his case, it should be noted, is based upon claims made by Anslinger himself in an interview with the author. It is difficult to determine the motivation behind human behavior, and it is probable that there will always be some disagreement about Anslinger's motives, but Professor Musto has made a significant contribution to our understanding of the thinking of a man who greatly influenced America's policy towards narcotics for some thirty years.

America's concern with narcotics, Musto demonstrates, is political as well as medical and legal. "The energy that has given impetus to drug control and prohibition came from profund tensions among socio-economic groups, ethnic minorities, and generations—as well as the psychological attraction of certain drugs" (p. 244). He points out, for example, how the use of a particular drug has often come to be associated with a particular ethnic minority or a subculture, and to symbolize the difference between that group and the rest of society. The occasion for legal prohibition of drugs for non-medical purposes, Musto suggests, appears to come at a time of social crisis between the drug-linked group and the rest of American society. The author provides in the text much evidence for this thesis, but I think more research is needed to determine to what extent it holds for particular drugs (e.g., while alcohol was associated with immigrant groups, there were certainly other factors involved in the drive for prohibition in the early twentieth century).

It seems a minor point to criticize such an excellent work for its title, but I cannot help commenting that I would have preferred the title originally announced by the author for the book, i.e., "Narcotics in America: A Social History" (perhaps modified to "Narcotic Controls . . ."). If the subtitle ("Origins of Narcotic Control") should be overlooked, the term "American Disease" might lead to confusion. A more serious objection is that the author has not convincingly demonstrated the thesis implied in the title and in the text, i.e., that narcotic addiction is a peculiarly American problem.

Reviewed by JOHN PARASCANDOLA, Ph.D., Director of the American Institute of the History of Pharmacy and Associate Professor of History of Pharmacy and History of Science, University of Wisconsin, Madison, Wisconsin.

THE BULLETIN RECENTLY RECEIVED *

Ricardo Archila. *Lorenzo Campins y Ballester; complementos biográficos.* Caracas: Tip. Vargas, 1975. 32 pp.

Claude Bernard. *Lectures on the Phenomena of Life Common to Animals and Plants.* Vol. 1 of Translation by Hebbel E. Hoff, Roger Guillemin and Lucienus Guillemin. Springfield, Ill.: Charles C Thomas, 1974 (American Lecture Series). xxxv + 288 pp. Ill. $12.95.

Joan Bernard. *Vital Signs; a Doctor Diagnoses the Medical Revolution.* New York: Macmillan, 1975. 244 pp. $9.95

Chandler McC. Brooks, Kiyomi Koizumi and James O. Pinkerton (Editors). *The Life and Contributions of Walter Bradford Cannon, 1871-1945.* His Influence on the Development of Physiology in the Twentieth Century. Brooklyn, N.Y.: State University of New York, Downstate Medical Center, 1975. xxii + 264 pp. Ill. $20.00

Luis F. Caballero León. *Dr. Francisco Etchegoyan y Montané, padre de la veterinaria Cubana, 1870-1951.* La Habana, 1971 (Cuadernos de Historia de la Salud Pública, 53). 137 pp. Ill.

Basil Clarke. *Mental Disorder in Earlier Britain.* Exploratory Studies. Cardiff: University of Wales Press, 1975. xii+ 335 pp.

Esther Fischer-Homberger. *Die traumatische Neurose; vom somatischen zum sozialen Leiden.* Bern-Stuttgart-Wien: Verlag Hans Huber, 1975. 264 pp. Fr. 22/DM 21.

Nicholas M. Greene. *Anesthesiology and the University.* Philadelphia, Toronto: J. B. Lippincott, 1975. ix + 164 pp. $10.00

Francisco Guerra. *Historia de la materia médica Hispano-Americana y Filipina en la época colonial.* Inventario critico y bibliográfico de manuscritos. Madrid: Afrodisio Aguado, 1973. 218 pp. Ill. 500 Pts.

——*El médico politico.* Estudios biográficos sobre la influencia del médico en la historia politica de Hispano América y Filipinas. Madrid: Afrodisio Aguado, 1975. 350 pp. Ill. 650 Pts.

Josef van Langendonck. *Prelude to Harmony on a Community Theme; Health Care Insurance Policies in the Six and Britain.* Ed. Gordon Forsyth. London, New York: Oxford University Press for the Nuffield Provincial Hospitals Trust, 1975. xii + 303 pp. $20.75.

Chauncey D. Leake. *An Historical Account of Pharmacology to the Twentieth Century.* Springfield, Ill.: Charles C Thomas, 1975 (American Lecture Series). ix + 219 pp. $12.50 (cloth), $8.95 (paper).

David C. Lindberg. *A Catalogue of Medieval and Renaissance Optical Manuscripts.*

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* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section. Items received, other than those assigned for review, are ultimately incorporated into the collection of the Institute of the History of Medicine.

Toronto: Pontifical Institue of Mediaeval Studies, 1975 (Subsidia Mediaevalia, IV). 142 pp. $7.50.

Laura y Elisa López y Carvajal. *Dr. Enrique López Veitia* (Gran oftalmólogo y fundador de los Congresos Médicos de Cuba). La Habana, 1971 (Cuadernos de Historia de la Salud Pública, 54). 213 pp. Ill.

Herbert Mayo. *Anatomical and Physiological Commentaries.* With an Introduction by Paul F. Cranefield. Published under the auspices of the Library of the New York Academy of Medicine. Metuchen, N.J. : The Scarecrow Press, 1975 (History of Medicine Series, 45). xiv + 41 pp. Ill. $12.00.

Derek de Solla Price. *Science since Babylon.* Enl. ed. New Haven: Yale University Press, 1975. xvi + 215 pp. Ill. $3.45 (paper); $15.00 (cloth).

César Rodriguez Expósito. *Finlay por cuarta vez ante el Congreso Internacional de Historia de la Medicina.* La Habana, 1971 (Cuadernos de Historia de Salud Pública, 52). 224 pp. Ill.

Spencer L. Rogers. *Artificial Deformation of the Head.* New World Examples of Ethnic Mutilation and Notes on Its Consequences. San Diego, Calif.: San Diego Museum of Man, 1975 (San Diego Museum Papers, 8). 24 pp. Ill.

Nydia Sarabia. *Dr. Manuel Sánches Silveira, médico rural.* La Habana, 1971 (Cuadernos de Historia de la Salud Pública, 51). 348 pp. Ill.

Joseph Schiller and Tetty Schiller. *Henri Dutrochet (Henri du Trochet, 1776-1847): Le matérialisme mécaniste et la physiologie générale.* Paris: Librairie Scientifique et Technique Albert Blanchard, 1975. 227 pp. Ill. Fr. 30.

Vieda Skultans. *Madness and Morale; Ideas on Insanity in the Nineteenth Century.* London & Boston: Routledge & Kegan Paul, 1975. xv + 260 pp. Ill. $17.25.

Maurice B. Vischer. *Ethical Constraints and Imperatives in Medical Research.* Ed. Ralph Slovenko. Springfield, Ill.: Charles C Thomas, 1975 (American Lecture Series). ix + 116 pp. $8.50.

Manfred Waserman (Comp.). *Bibliography on Oral History.* Revised. New York: Oral History Association, 1975. 53 pp. $3.00.

James Harvey Young. *American Self-Dosage Medicines; an Historical Perspective.* Lawrence, Kan.: Coronado Press, 1974 (Logan Clendening Lectures on the History and Philosophy of Medicine, n.s. 1) 75 pp. $5.00.

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